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ENVIRONMENTAL REASSESSMENT

NEW DUDLEY STREET
PHASE II CONSTRUCTION

ROXBURY
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submitted by

GREEN INTERNATIONAL AFFILIATES INC.
CONSULTING ENGINEERS BOSTON, MASSACHUSETTS

GREEN INTERNATIONAL AFFILIATES, INC.
CONSULTING ENGINEERS AND PLANNERS
625 McGRATH HIGHWAY • BOSTON, MASSACHUSETTS 02145 • PHONE(617)623-2311

October 6, 1980

Mr. Justin L. Radlo, P.E.
Chief Engineer
Commonwealth of Mass.
Department of Public Works
100 Nashua Street
Boston, Mass. 02114

SUBJECT: Boston Redevelopment Authority
Campus High Project.
New Dudley Phase II
GIA Project No. 7008

Dear Mr. Radlo:

Transmitted herewith are five (5) copies of the "Environmental Reassessment" for proposed New Dudley Street, Phase II, as prepared by us for the Boston Redevelopment Authority, for your review and approval.

Please note the enclosed letter from Joseph F. Casazza, Commissioner of Public Works, expressing his desire for expedient review and approval of this report.

Very truly yours,

GREEN INTERNATIONAL AFFILIATES, INC.

Profulla C. Khaund, P.E.
Vice President

JMcK/mpi

Enclosures

cc: Wallace Orpin
Director of Engineering, BRA

Boston

October 6, 1980

Commissioner Dean P. Amidon
Massachusetts Department of Public Works
100 Nashua Street
Boston, Massachusetts 02114

RE: NEW DUDLEY STREET, PHASE II - ENVIRONMENTAL REASSESSMENT

Dear Commissioner Amidon:

Transmitted herewith is an "Environmental Reassessment" for proposed New Dudley Street, Phase II, as prepared through the Boston Redevelopment Authority. This has been produced in response to the Federal Highway Administration's request (8/28/79) for a reassessment of the social, economic and environmental effects of the project. The Section 106 historical review, which is currently being conducted, will be completed under separate cover and form part of project documentation.

We request that you review and hopefully approve the contents of this report insofar as they are not contingent upon the 106 review, and inform us of your conclusions. After the 106 document has been submitted, you and the FHWA should be in a position to determine whether the proposed improvements represent a major or non-major action and to authorize the holding of an official public hearing, as has been required. It is hoped that these determinations may be made in the near future.

Once the above items have met with your approval, the Boston Redevelopment Authority will finally be able to instruct its engineers to prepare plans, specifications and estimate for the project. In addition, property acquisition and relocation can proceed, including the Post Office premises which have, over the years, been the subject of much discussion, but little action. The lack of overt progress in the development of New Dudley II has been one factor affecting Post Office plans.

Your expeditious processing of these and related matters, as they arise, will be most appreciated.

Yours very truly,

Joseph F. Casazza
Public Works Commissioner

CC: Secretary James O'Leary, Robert Ryan, Comm. H. Joseph Powderly

Kevin H. White, Mayor/DEPARTMENT OF PUBLIC WORKS / Boston City Hall/City Hall Plaza 02201
Joseph F. Casazza, Commissioner, 725-4900
Robert P. Mehegan, Executive Secretary 725-4901

4.7. 81-672

CITY OF BOSTON

MASSACHUSETTS
CONSTRUCTION OF NEW DUDLEY STREET, PHASE II

ENVIRONMENTAL REASSESSMENT

Prepared By
GREEN INTERNATIONAL AFFILIATES, INC.
625 McGrath Highway
Somerville, Massachusetts 02145

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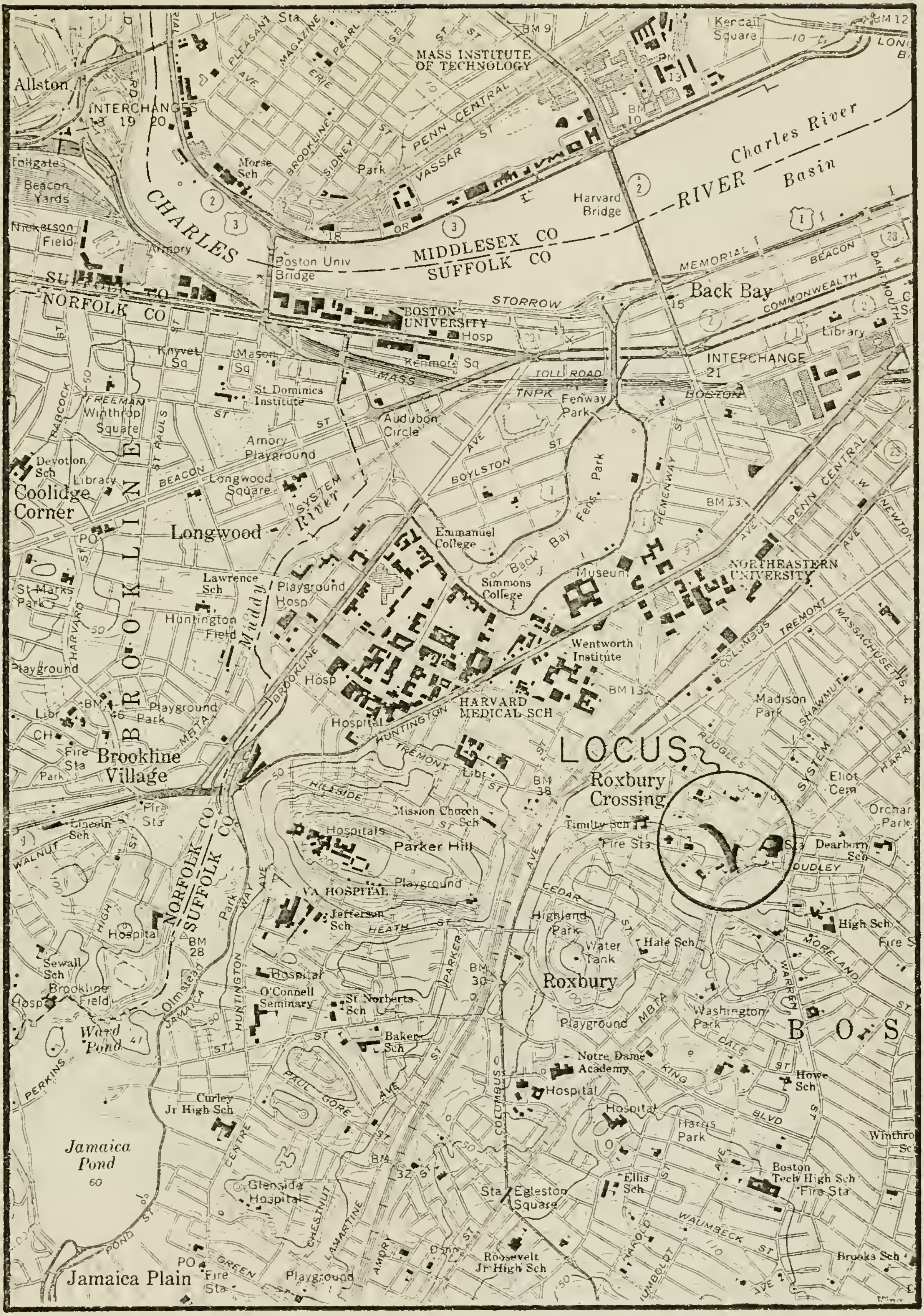
INTRODUCTION

General

The purpose of this report is to document the environmental impacts of the proposed completion of New Dudley Phase II, the planned final link of New Dudley Street in Roxbury. To this end, two alternative functional designs are set forth and their relationships to land use and other issues are analyzed. One of the alternatives is recommended and is subjected to more detailed environmental scrutiny.

New Dudley Street, between Tremont Street and Washington Street, was formulated as a four-lane major street element in the Campus High School Urban Renewal Project and Model Cities Area of Roxbury (See Figure 1 - Location Map). The new street was planned to be completed in two phases.

New Dudley Street Phase I from Tremont Street to Roxbury Street and the improvements to Dudley Terminal area streets have been completed. New Dudley Street Phase II, from Roxbury Street to Washington Street is necessary to complete the original project between Phase I and the Dudley Terminal. Presently traffic in the Phase II area is one- way westbound via Roxbury Street, with the eastbound connection occurring via the awkward Putnam/(Old) Dudley Street route.



LOCATION MAP

Figure 1

Project Background

New Dudley Street is part of the street network planned as part of the Campus High School Urban Renewal Project and Model Cities Program in Roxbury. It extends from Tremont Street on the west to Washington Street and Dudley Terminal on the east.

The new street was planned to serve the interests of traffic safety, efficient land requirements and environmental concerns, as follows:

1. To provide the major means of access to the new Madison Park High School and the Occupational Resource Center.
2. To frame out redevelopment areas, providing a replacement for streets being discontinued.
3. To provide a good link between the Dudley Terminal area and the Southwest Corridor.
4. To relieve the John Eliot Square area of extraneous through traffic.

Federal/State Urban Systems funds have provided for the partial implementation of New Dudley Street and related improvements. At a construction cost of $1 million, New Dudley Phase I from Columbus Avenue to Roxbury Street was constructed in 1973. It is a 60-foot wide roadway providing for four moving lanes and two parking or curb service lanes, with a length of approximately 2100 feet. Improvements to streets near Dudley Terminal were completed at a cost of approximately $2.2 million. This work provided construction on Dudley Street between Washington and Harrison and Warren Street from Dudley to Walnut, coupled with circulation changes and street lighting in a wider area.

Project Background (con't.)

New Dudley Phase II represents the missing link of approximately 1000 feet between New Dudley I and Dudley Terminal. The delay in its realization has been caused by funding uncertainties, questions of the project's relation to uncertain future land uses, and lack of agreement on the scale and shape of the design itself.

The area of New Dudley II is at present in a state of transition in several respects. Not only is the street network incomplete, but new land use plans, primarily for schools and housing, have yet to be fully realized. In addition, vacant and underutilized properties exist in the commercial activities of Dudley Terminal and in the residential area of Highland Park to the south. In traffic terms, the existing underutilization presents opportunities for new development and renewal of existing premises, leading to a probable growth in street use in the future.

This report describes two alignments. Alternative A requires the acquisition of the Post Office (see Figure 5), forming a direct two-way connection between existing New Dudley I and Dudley Square. Alternative B allows the Post Office to remain (see Figure 6) by providing a one-way pattern around the Post Office to Washington Street via a new connection to Old Dudley Street.

Under optimum circumstances, construction of New Dudley II could not be completed until 1982, even though the operation of the Madison Park High School, the proposed Occupational Resource Center and other land uses would indicate that the link is extremely overdue. It is hoped that this report may serve as an impetus to bring about the necessary agreements for both the land use and street improvement aspects for the area.

TRAFFIC SERVICE

General

The missing link of New Dudley II does not allow a direct two-way traffic connection via New Dudley between Columbus Avenue and Dudley Terminal. The link in question is now served by a one-way westbound section of Roxbury Street between Washington Street and New Dudley I. This creates the following undesirable circumstances:

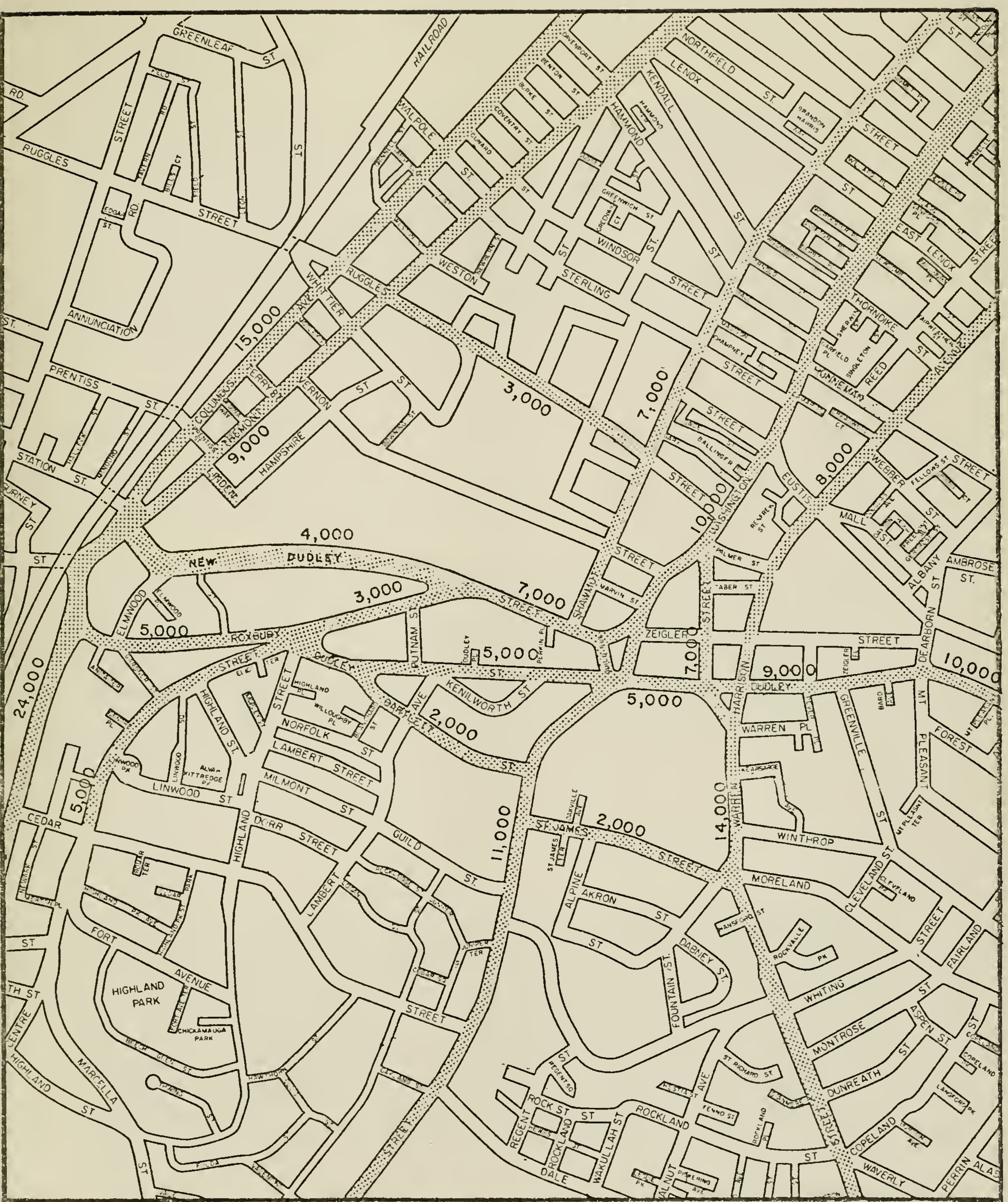
1. Eastbound traffic on New Dudley I must travel the awkward route in the John Eliot Square area via Roxbury, Putnam and Dudley Street to reach Washington Street.

2. The existing poor connection encourages the use of residential streets in Highland Park for "crosstown" movements.

3. The incomplete street prevents a resolution of proposed circulation changes in the John Eliot Square area, including the closure of Roxbury Street at Columbus Avenue and the more local use of (old) Dudley Street.

Existing Traffic Volumes

The level of traffic on existing major streets in the New Dudley area is shown in a flow map (Figure 2). As can be seen, indicated average daily traffic volumes range from a high of 24,000 vehicles on Columbus Avenue and a low of 2000 on Bartlett and St. James Streets. The combined existing volume in the New Dudley corridor is about 15,000. Streets not showing a flow band are more local in nature and generally experience volumes less than 2000 vehicles per day.



TRAFFIC FLOW MAP

EST. AVERAGE DAILY TRAFFIC 1978

FIGURE 2

Existing Traffic Volumes (con't.)

Unsatisfactory traffic conditions exist at a number of locations in the area. Capacity limitations are, in the main, evident in streets adjacent to Dudley Terminal and are caused primarily by poor parking practices - double parking, parking in illegal curbside spaces, etc. Although congestion is not at present primarily caused by physical width limitations, the circulation pattern results in the problems already cited and in land use issues set forth later in this report.

Projected Traffic Volumes

An indication of future levels of traffic (in 1987) is presented in Figure 3.

A study was also completed for future levels of traffic (in 2000) for the Southwest Corridor Project and this report is available at the City of Boston Traffic and Parking Commission and also at Green International Affiliates, Inc., Boston, Mass. More specific to this project, a prediction[1] of 1987 and 2000 traffic for air and noise analysis was produced.

Traffic Summary

Traffic studies indicate that traffic volumes in the project area will continue to increase. This increase in volume will create additional traffic safety problems because of the functional inadequacies of the existing street system to handle projected traffic volumes and circulation patterns. To complete the street system and to help resolve the transportation needs, in the Campus High School Urban Renewal Project, a rather well-defined and straight forward improvement project is necessary.

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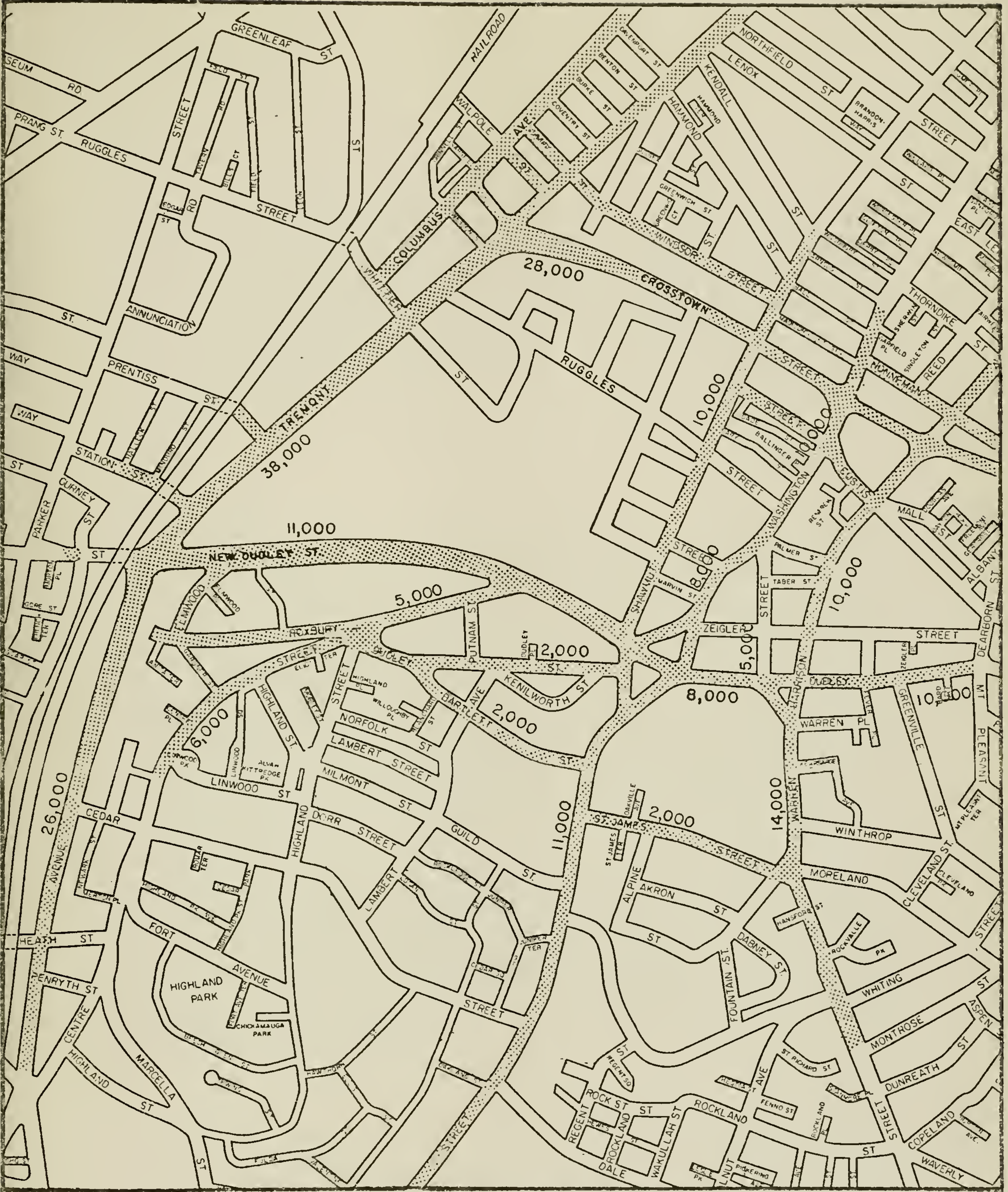
[1] "Traffic Analysis Study - Roxbury Street Phase II - 1987 & 2000, Stanley Siegel, Diversified Engineering Services, Brookline, MA.



TRAFFIC FLOW MAP

EST. AVERAGE DAILY TRAFFIC 1987

FIGURE 3

PHYSICAL ENVIRONMENT

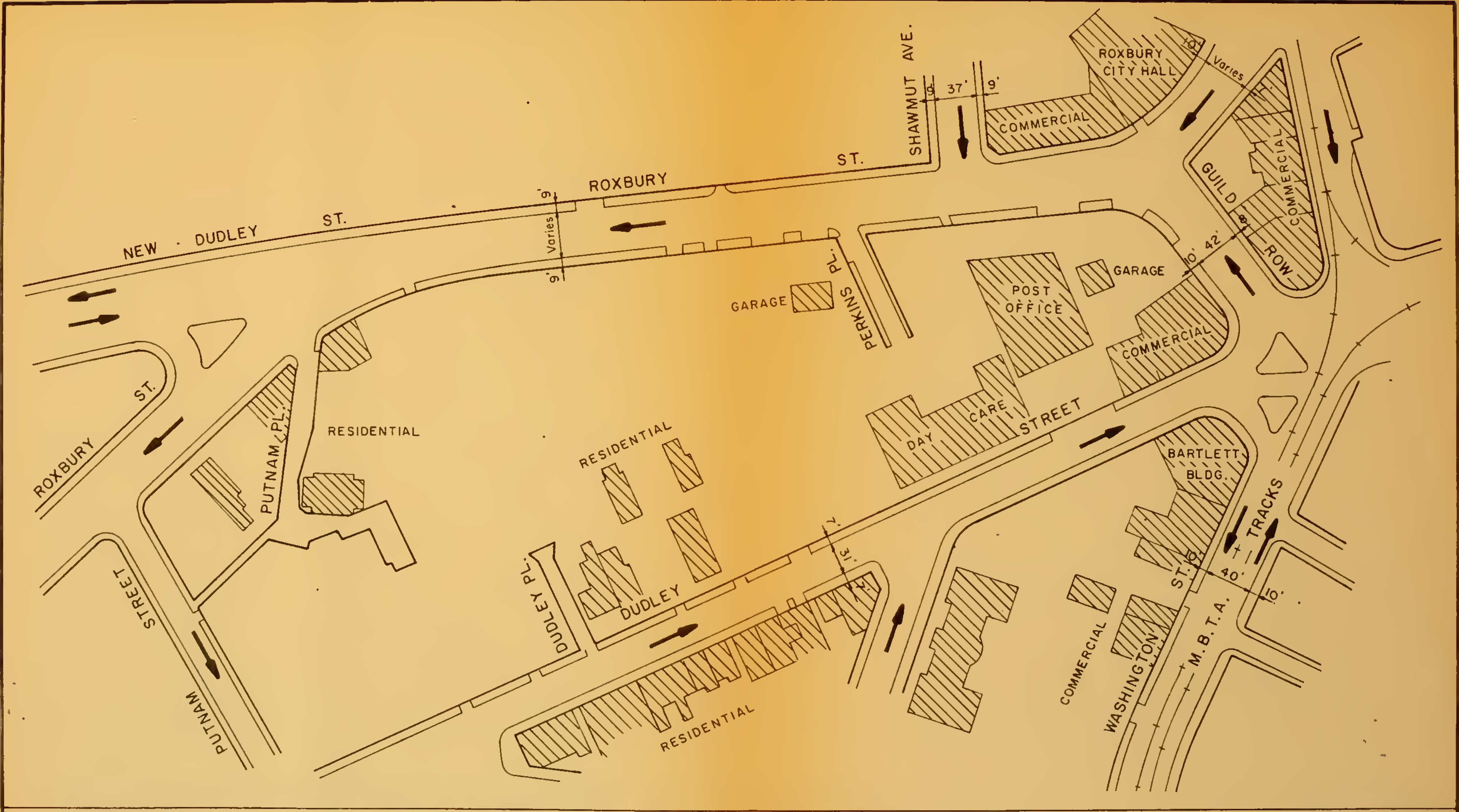
General

The existing unresolved portion of New Dudley contributes to a degradation of land uses in the area (See Figure 4). Currently two buildings in this block are vacant, four have been demolished in the last year or so, and up to nine buildings must be demolished under Alternate A for New Dudley II. Renewal or development plans in this and adjacent areas cannot logically proceed until the street plans are finalized and programmed.

Land Use

One of the major land use issues related to the project has been the future of the Dudley Station Post Office existing on Roxbury Street. New Dudley II (Alternate A) (Figure 5) requires acquisition and demolition of the Post Office building. The facility is considered a community focal point which must be retained in the immediate vicinity. Plans for its relocation are therefore being closely linked to the development of New Dudley II. One site being considered is the BRA owned vacant parcel 1 (121,848 square feet ±) at the northwest corner of Shawmut Avenue and existing Roxbury Street, which is currently vacant.

Other land use plans are in various stages of development. Madison Park High School (Campus High School) was opened to students in September 1977. The proposed Occupational Resource Center at the corner of New Dudley and Tremont Street opened in September 1980. The high school enrollment is 2500 students with an additional 1800 at the Occupational Resource Center.



NEW DUDLEY ST. - EXISTING CONDITIONS

FIGURE 4

According to the original concept the majority of the students' transportation needs would be accommodated by the Orange Line and Dudley Station, with New Dudley as a prominent pedestrian connection. Actual policies formulated by the MBTA and the School Department, however, have dictated that school buses will be used as the primary transportation mode. On-site bus loading has been included in Phase I of the high school construction to handle these buses. The projected enrollment of the high school could require as many as fifty buses which would seriously impact traffic in the area if all students arrived or left during the same half-hour period. Similarly, the added faculty, staff and service vehicles will produce additional traffic and curb parking demands.

Given the current congested street network, the need for completion of New Dudley to meet these other demands is clear.

A third land use consideration is the future of the Dudley Terminal area. The recent improvements to the streets surrounding the area have had the aim of improving the environment of this important commercial district. New Dudley II represents the final link in a street arrangement planned to enhance opportunities for new development, to alleviate congestion in Dudley Square itself and to revitalize the area as a major community center.

Finally, 383 housing units have been completed and 15 buildings with 115 dwelling units and 7500 square feet of commercial space are being rehabilitated in the Campus High School Project and John Eliot Square areas. Future plans call for 242 additional housing units to be constructed. This increase in residential population is one more impetus for completing a logical street system which will protect local streets from through-traffic.

DESCRIPTION OF ALTERNATIVES

General

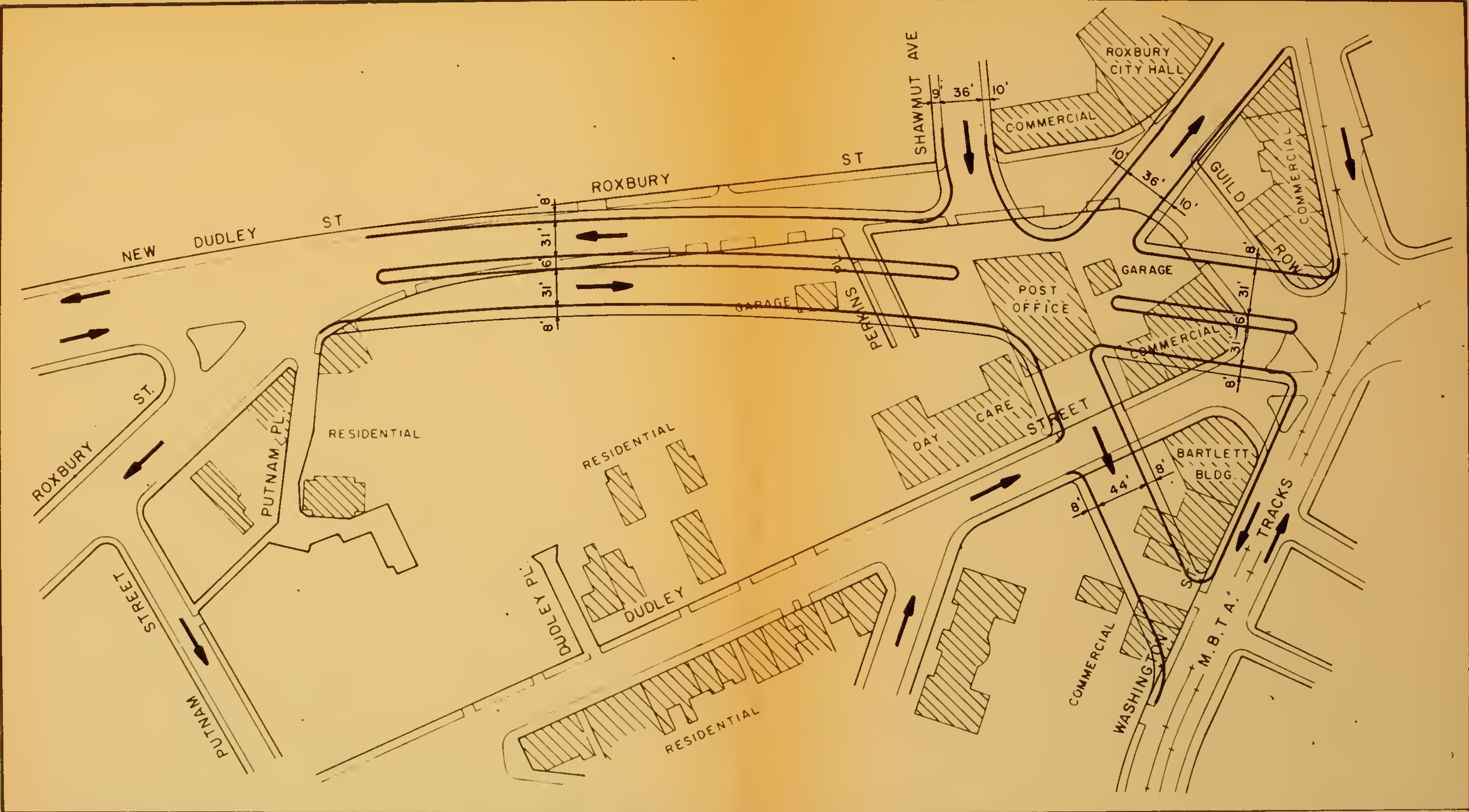
To complete the street system and to help resolve the transportation needs, land use and development issues in the Campus High Urban Renewal Project, a rather well-defined and straight-forward improvement project is necessary. Two alternate schemes for the proposed improvements have been developed, as described below:

Alternate A (See Figure 5)

Alternate A is basically a four-lane reconstruction of Roxbury Street in the 1000-foot gap between New Dudley Phase I and Dudley Square. This alignment represents a scaled-down version of the scheme proposed in the urban renewal plan. The typical section would consist of two 12-foot travel lanes, two 11-foot travel lanes, two 8-foot parking lanes, two 8-foot sidewalks and a 6-foot median along the centerline for a total right-of-way width of 84 feet. The overall location, dimensions and alignment of this middle portion of the street have been determined by the configuration of its two ends: New Dudley I to the west and Dudley Square to the east.

Supplementing the basic four-lane link is a "diagonal connector" from the new street to Washington Street. The purposes of this 300-foot section of roadway are to provide traffic with a bypass of capacity-deficient Dudley Square and to allow for circulation to and from Old Dudley Street.

The alignment for this connector has also been scaled-down from the urban renewal plan scheme and revised to provide for better intersecting geometry with Washington Street and to avoid the columns supporting the overhead transit system (which will remain for several years). The typical section is two 12-foot travel lanes, two 10-foot shoulders and two 8-foot sidewalks for a total right-of-way width of 60 feet.

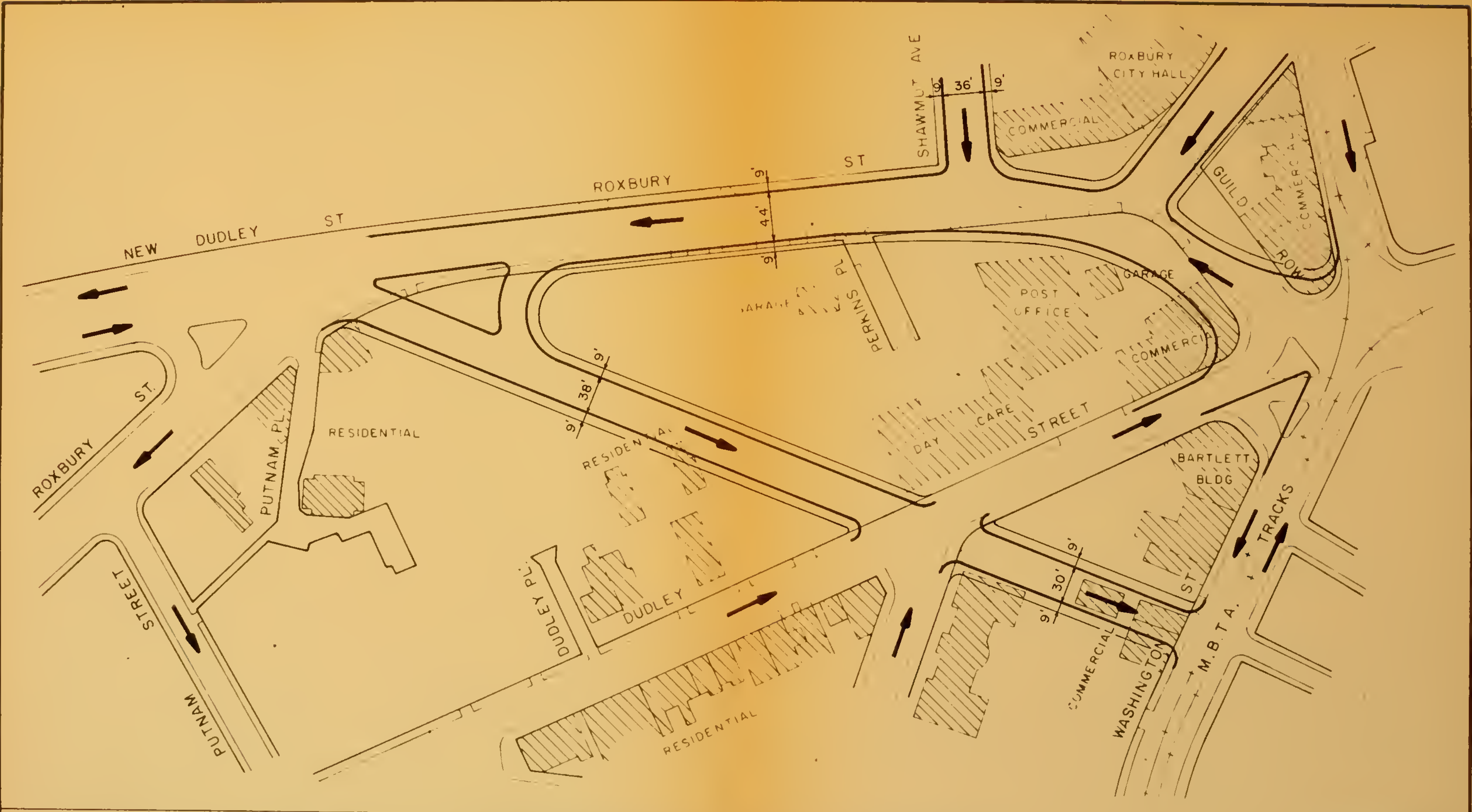


NEW DUDLEY ST. – ALTERNATIVE "A" ALIGNMENT FIGURE 5

Alternate B (See Figure 6)

Alternate B carries eastbound New Dudley traffic on a proposed new one-way roadway running to the south and west of the Post Office and Day Care Center,and serves westbound traffic on the route of existing Roxbury Street, creating a one-way pair of streets between New Dudley I and Washington Street. Shawmut Avenue must circulate to the new eastbound roadway in a rotary fashion. This represents a longer travel distance for Shawmut traffic than a direct connection, but is a vast improvement over the existing (legal) routing via Roxbury Street and Putnam Street to Old Dudley.

These changes establish a different land parcelization and street pattern which allows the project to be built without requiring relocation of the Post Office, provides a less isolated setting for the Bartlett Building, and consists of narrower roadways, albeit more of them. The one-way roadways of this alternative are proposed with two 11-foot moving lanes and two 8-foot curb service lanes for a curb-to-curb width of 38-feet.



NEW DUDLEY ST. - ALTERNATIVE "B" ALIGNMENT

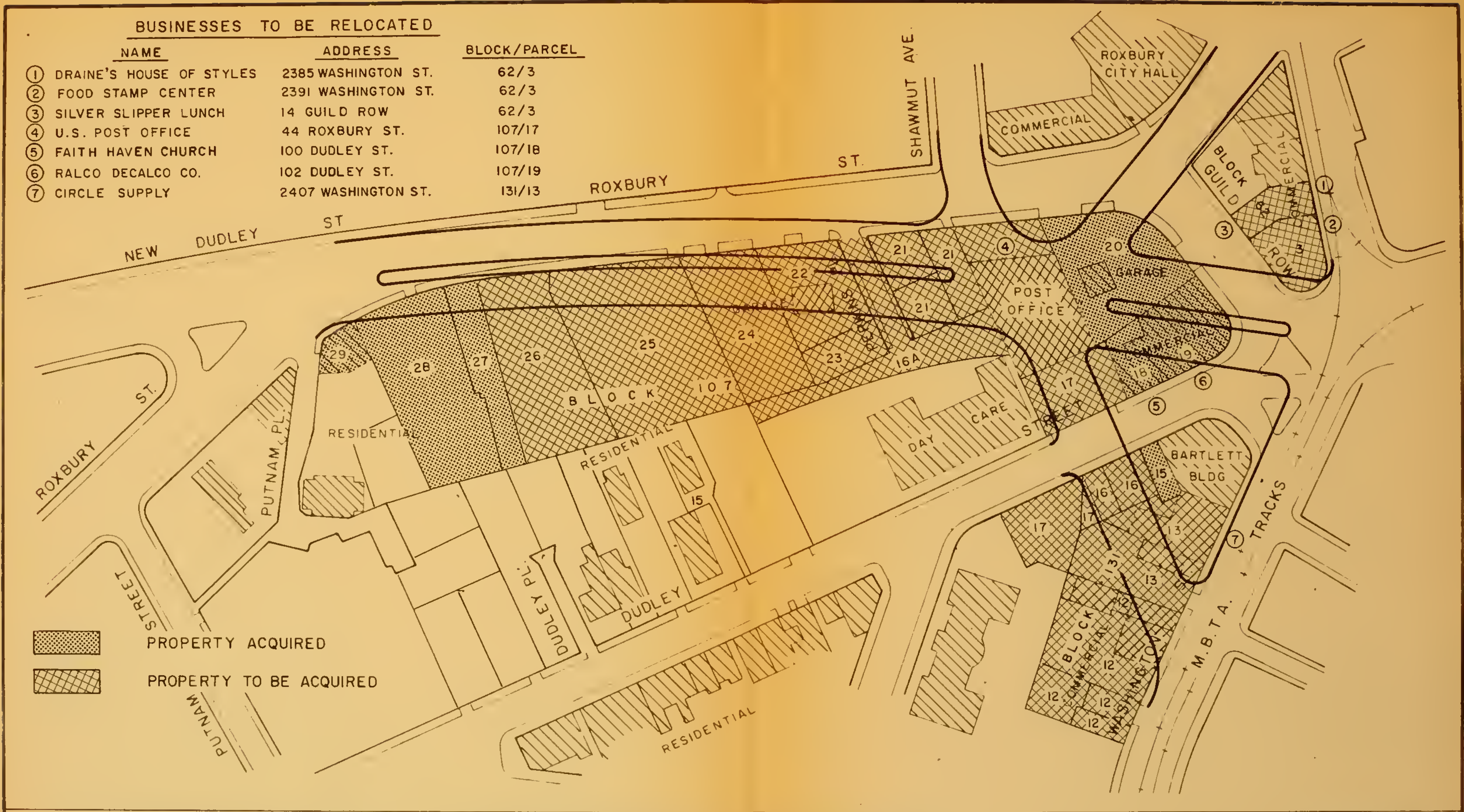
FIGURE 6

DISPLACEMENT OF PERSONS AND BUSINESSES

The implementation of Alternatives A and B will necessitate the taking of lands and the relocation of businesses to establish the desired right-of-way width. Business displacements and property taking for the two improvement Alternatives are summarized below:

Alternative	Business Displacements	Property Takings	Buildings to Be Demolished
A	7	13	9
B	5	5	6

Figures 7 and 8 show the location of business placements, property takings, and building to be demolished for Alternatives A and B respectively. It should be noted that the overall general affect of the business displacement on the economy of the community would be neligible as most of the firms, if they so desire, could relocate to any of the stores that are presently vacant in the area. The major employer to be displaced will be the U.S. Post Office. However, there will be no loss in employment if the Post Office is relocated, as envisioned, directly across the street from its existing location. The other major employer to be displaced, Circle Supply, will not affect the area due to loss of employment, as few if any of the employees reside in the community.



BUSINESSES TO BE RELOCATED

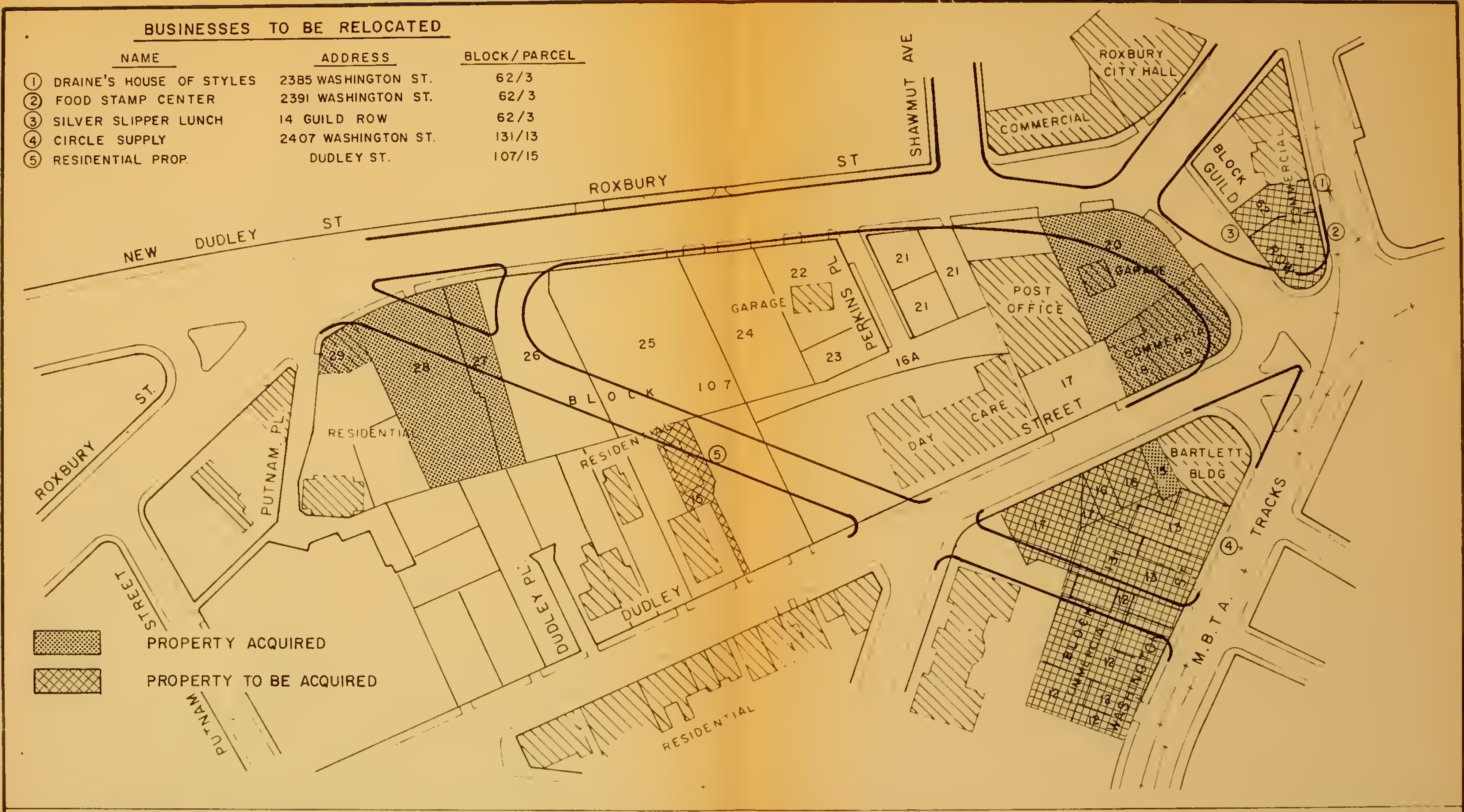
	NAME	ADDRESS	BLOCK/PARCEL
①	DRAINE'S HOUSE OF STYLES	2385 WASHINGTON ST.	62/3
②	FOOD STAMP CENTER	2391 WASHINGTON ST.	62/3
③	SILVER SLIPPER LUNCH	14 GUILD ROW	62/3
④	U.S. POST OFFICE	44 ROXBURY ST.	107/17
⑤	FAITH HAVEN CHURCH	100 DUDLEY ST.	107/18
⑥	RALCO DECALCO CO.	102 DUDLEY ST.	107/19
⑦	CIRCLE SUPPLY	2407 WASHINGTON ST.	131/13

▩ PROPERTY ACQUIRED

▨ PROPERTY TO BE ACQUIRED

ALTERNATIVE "A" – DISPLACEMENT SUMMARY

FIGURE 7



BUSINESSES TO BE RELOCATED

	NAME	ADDRESS	BLOCK/PARCEL
①	DRAINE'S HOUSE OF STYLES	2385 WASHINGTON ST.	62/3
②	FOOD STAMP CENTER	2391 WASHINGTON ST.	62/3
③	SILVER SLIPPER LUNCH	14 GUILD ROW	62/3
④	CIRCLE SUPPLY	2407 WASHINGTON ST.	131/13
⑤	RESIDENTIAL PROP.	DUDLEY ST.	107/15

▒ PROPERTY ACQUIRED

▨ PROPERTY TO BE ACQUIRED

ALTERNATIVE "B" – DISPLACEMENT SUMMARY

FIGURE 8

COST ESTIMATES

The following estimated costs are based on prices of labor and materials in the general project vicinity as of June 1980.

Cost Estimate - Alternate A

*I.	Construction	
	Bit. Conc. Pavement	$ 173,000.00
	Gravel Borrow	57,000.00
	Granite Curbing	82,000.00
	Conc. Sidewalks	65,000.00
	Street Lighting	162,000.00
	Sewer, Drain and Water	486,000.00
	Traffic Signals and Markings	140,000.00
	Landscaping	65,000.00
	MBTA Conduit and M.H.	54,000.00
	Earthwork	135,000.00
	Miscellaneous	76,000.00
	Construction Sub-total	$1,495,000.00

**II.	Property		
	Acquisition	$507,000.00	
	Relocation	300,000.00	
	Demolition	122,200.00	
	Property Sub-total		$ 929,200.00
	Construction Sub-total		1,495,000.00
	I & II Total		$2,424,200.00
III.	Contingencies		
	15% of I & II		363,630.00
	Total		$2,787,830.00

* These values are used solely for a means of comparison between Alternatives.

** The actual land cost will be based on appraisal of the property in question.

Cost Estimate - Alternate B

*I. Construction

Bit. Conc. Pavement	$ 173,000.00
Gravel Borrow	62,000.00
Granite Curbing	109,000.00
Conc. Sidewalks	107,000.00
Street Lighting	243,000.00
Sewer, Drain and Water	621,000.00
Traffic Signals and Markings	140,000.00
Landscaping	108,000.00
MBTA Conduit and M.H.	65,000.00
Earthwork	205,000.00
Miscellaneous	108,000.00
Construction Sub-total	$1,941,000.00

**II. Property

Acquisition	$177,000.00	
Relocation	165,000.00	
Demolition	12,000.00	
Property Sub-total		$ 354,000.00
Construction Sub-total		1,941,000.00
I & II Total		$2,295,000.00

III. Contingencies

15% of I & II	344,250.00
Total	$2,639,250.00

SELECTION OF ALTERNATIVES

General

In order to identify the Alternative which would meet the community transportation needs without having detrimental effects on the natural environment, several meetings were held with the community and Boston Redevelopment Authority.

From these meetings and related study, Alternate A was selected as the preferred scheme for implementation, as outlined below.

Evaluation of Alternatives

One of the factors in deciding between Alternate A or Alternate B is whether to demolish and relocate the Post Office. Alternate A requires the relocation and Alternate B does not.

After several community meetings it was decided that the relocation of the Post Office if need be was not a major crisis as long as it remained in the immediate vicinity.

Alternate A forms a direct two way connection between New Dudley Street, Phase I and Washington Street with a connector road between Shawmut Avenue and Washington Street. This alternative presents greater opportunity for new development and renewal of existing premises, leading to a growth in street use in the future and also has the support of the general public. It also offers much greater flexibility in various future options for Washington Street north of Dudley, including directional changes or pedestrianization.

Alternate B forms a one way traffic pattern around the Post Office to Washington Street via a new connection to Old Dudley Street. This represents a longer travel distance for Shawmut traffic than a direct connection and it also consists of generally narrower and more dispersed roadways. This alternative would provide sufficient traffic volume capacity and alleviate traffic safety hazards, but the one-way traffic flow would not allow as great of an opportunity to develop the existing land into residential or commercial districts, due to the awkward parcelization it creates.

DETAILED EVALUATION OF SELECTED ALTERNATIVE

General

Alternate A is a major improvement proposal, which appears to afford the most beneficial impacts and therefore is the preferred alternative. A more detailed evaluation had to be undertaken to ensure that any potential adverse impacts would not override anticipated benefits. A Massachusetts Environmental Notification Form has been completed for this Alternative and is attached as Appendix C. A discussion of the environmental impacts follows:

Wetlands and Floodplains

There are no wetlands or floodplains within the project limits and as a result this alternative will not cause any adverse impacts to wetlands and floodplains.

Historical and Archeological Sites

Under this alternative land would have to be acquired for the construction of New Dudley Street which is within the boundaries of the Roxbury Highlands Historic District. No buildings of local historical significance would be adversely affected by the implementation of this plan. On the contrary, the construction of New Dudley Street will make it easier for visitors to commute to John Eliot Square where the Thomas Dilloway House and the First Church of Roxbury are located, while at the same time lessening the impact of through traffic on these points of interest.

With regard to archeological sites, during previous construction projects in the Campus High School Urban Renewal Project Area, no archeological artifacts have been uncovered. The Massachusetts Department of Public Works, through the Federal Highway Administration, is presently conducting a Section 106 historical review which was requested by Commissioner Joseph F. Casazza of the City of Boston Department of Public Works. The results of the review will be incorporated in the final copy of this Environmental Reassessment.

Parks and Recreation

Parcels of land which may be too small for development can be utilized as open space areas as will be determined by future detailed land use planning When New Dudley Street is completed, access to the Campus High School Athletic Field will be more accessible.

Displacement of Persons and Businesses

The implementation of Alternate A would require the acquisition of 13 parcels of land. There would be 9 buildings which would also have to be demolished.

Although this would appear to be a major adverse impact, public acceptance to the acquisition of these lands has been overwhelmingly positive as evidenced by the comments made at the community meetings. A complete listing of owners of properties to be acquired is given in Appendix B.

Conceptual Relocation Plan

Seven businesses and three outdoor advertising displays are scheduled for displacement under Alternate A. These seven firms and the approximate square footage they presently occupy and the number of employees for each firm are listed below.

NAME OF BUSINESS	ADDRESS	TYPE	APPROX. SQ. FT.	NO. OF EMPLOYEES
Draine's House of Styles	2385 Washington St.	Beaty Salon	2,000	5
Food Stamp Center	2391 Washington St.	Food Stamp	900	4
Silver Slipper Lunch	14 Guild Row	Restaurant	600	5
U.S. Post Office	44 Roxbury St.	Post Office	16,000	60
Faith Haven Church	100 Dudley St.	Church	900	1
Ralco Decalco Co.	102 Dudley St.	Stickers, decals, etc.	2,800	3
Circle Supply	2407 Washington St.	Hardware	25,000	20

A survey of the Dudley Street, Roxbury Street and Washington Street area reveals that there are eight to ten vacant stores which would be suitable for all of the businesses being displaced with the exception of the U.S. Post Office and Circle Supply Company.

The Post Office is expected to construct a new building on vacant land directly across from its present location. Circle Supply will in all probability relocate to the South Shore where most of its twenty employees reside. The relocation process will however, attempt to find a City of Boston site for the company.

The overall general effect of the business dislocation on the economy of the community would be negligible as most of the firms, if they so desire, could relocate to any of the stores that are presently vacant in the area.

The major firm, in terms of employment scheduled for displacement, is of course, the U.S. Post Office. The expectation that the Post Office will be relocating directly across the street will be an asset to the community, as well as providing more adequate premises for the Postal Service.

The other major empoloyer to be displaced, Circle Supply, would not affect the area due to loss of employment as few if any of the employees reside in the community. As noted above it is hoped that the business activity will nonetheless remain in Boston.

There does not apear to be any special permit needs, i.e., liquor license, gasoline storage tanks, etc., in connection with the ocmmercial displacement for this project.

Noise

An analysis of traffic noise under existing conditions and under future Alternative A and the No-Build alternative to the New Dudley Street Phase II development has been undertaken. From the FHWA Traffic Noise Prediction Model it has been concluded that traffic noise exposure under Alternative A will be less than under the No-Build alternative.

Construction noise, although possibly being excessive in specific instances, can be controlled through the use of quiet equipment, and through the use of portable barriers and screens. It has been recommended that in addition to the standard controls that apply to all construction work, contract documents require special contractor efforts to control noise and that steps be taken toward insuring contractor compliance with contract document noise control provisions and also compliance with City's noise standards for construction.

The detailed noise assessment is attached as Appendix A.

Water Quality

There are two separate water quality impacts associated with the implementation of this Alternative. With the increased roadway width there would be some increase in the stormwater runoff and consequently an increase in pollutants reaching the receiving waters. Secondly, during construction, there is the possibility that silt from excavations and chemicals used for dust control, may reach the receiving waters. Possible impacts during construction will be mitigated by the required and specified use of proper construction methods including hay or straw bail filters which would remove particulate matter from storm water runoff prior to being discharged to the receiving waters.

Regarding the long term effects of the increased drainage area, the area in question would be approximately 2.5 acres in additional pavement and it is anticipated that this would not appreciably change drainage conditions as a new separated drainage system will also be constructed. However, the proper use of road salts during winter months and a regular schedule of street cleaning would mitigate adverse effects caused by the small increase in storm water runoff.

Air Quality

There are two impacts to air quality associated with Alternate A. The short term effect would be due to the construction activities and generally would consist of dust problems. As in the case of other construction related impacts, problems from dust will be mitigated by required and specified use of proper construction methods, including the use of chemicals when necessary. This impact would be of a short term nature and be wholly reversible.

Regarding the long term effects on air quality from traffic, it has been determined via an air quality study that no increase in emission concentrations from increased traffic on New Dudley Street would occur. This is due in part to the fact that the increased traffic volume will in essence be a redistribution of traffic utilizing routes in the immediate area and therefore the effects on the overall area would remain the same. It has been determined via modeling analysis methods that no degradation of air quality will result and possibly an upgrading will occur due to the improved traffic flow under this Alternative.

The detailed air quality assessment is attached as Appendix A.

BASIC DESIGN CRITERIA

General

The following design characteristics have been used in the development of Alternate A.

Design Characteristics (New Dudley Street)

1. Design Speed		40 mph (design)
		30 mph (actual)
2. Right-of-Way Width: (New Dudley Street)	2 travel lanes, each	12 feet (where 1' curb offset is required)
	2 travel lanes, each	11 feet
	2 curb service lanes, each	8 feet
	2 sidewalks, each	8 feet
	1 median island	6 feet
	Total Width	84 feet
3. Minimum Curvature along Baseline		2,265 foot Radius
4. Gradients		As required by existing intersections, but not exceeding 5%.
5. Pavement		2 1/2" bituminous wearing surface with 4 1/2" bituminous base course over 12" gravel sub-base.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The existing Roxbury Street right-of-way does not afford a sufficient level of traffic service to the vehicles seeking to use the roadway.

The encroachment of existing buildings at one end and the lack of proper curb service lanes have further increased the congested nature of the existing roadway.

The existing structural conditions of the Roxbury Street pavement are a detriment to motor vehicle operators utilizing Roxbury Street as an east-west route.

Recommendations

As a means of alleviating present traffic problems as well as promoting a rehabilitation of the existing Roxbury Street neighborhood it is recommended that:

1. The existing Roxbury Street right-of-way be discontinued and a new street be laid out (New Dudley Street) to an 84 foot width to incorporate two 12 foot travel lanes, two 11 foot travel lanes, two 8 foot parking lanes, two 8 foot sidewalks and one 6 foot median island, as embodied in Alternate A.

2. To facilitate the recommended Alternate A right-of-way, acquisition of lands generally along the southern side line of the existing Roxbury Street right of way, is necessary.

3. A 60' rigiht-of-way diagonal connector between Shawmut Avenue and Washington Street should form part of this project.

Next Steps

Following acceptance of this Reassessment or modification thereof by the Massachusetts Department of Public Works and the Federal Highway Administration, a Design Public Hearing on this project will be held. Subject to the outcome of the hearing, final engineering of the improvements can proceed, preparatory to land acquisition and construction.

APPENDIX A

Traffic Noise and Air Quality Assessments

Gov. 98. 685

CAVANAUGH TOCCI ASSOCIATES
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August 15, 1980

TRAFFIC NOISE ASSESSMENT

NEW DUDLEY STREET
PHASE II ALTERNATIVES

Air quality impact statement
follows this report.

SUBMITTED TO:

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I. INTRODUCTION

The Boston Redevelopment Authority has undertaken studies of various alternatives for the development of New Dudley Street which extends between Tremont Street and the Dudley Street - Washington Street intersection. Development studies have been divided into two phases. Phase I deals with areas adjoining New Dudley Street between Tremont Street and Roxbury Street. Phase II deals with areas adjoining New Dudley Street between Roxbury Street and the Washington Street - Dudley Street intersection. Existing and proposed street alignments are shown in Figures 1 and 2.

The purpose of this study is to evaluate environmental noise effects produced by traffic on the proposed New Dudley Street Phase II design. The Federal Highway Administration Traffic Noise Prediction Model (FHWA Publication RD-77-108) has been used to evaluate traffic noise exposure at several locations. Decisions related to the effects of traffic noise are based on FHWA Traffic Noise Model calculations for peak hour traffic volumes on existing street alignments in 1978 and 2000.

Traffic flow interruptions and low vehicle speeds, which are characteristic of city street traffic conditions, have greatly varying effects on traffic noise produced. Since these characteristics are widely varying they are difficult to accurately incoorporate into noise prediction models. For purposes of assessing city street traffic noise, data obtained from traffic noise prediction models is best used as a means to compare alternatives and to observe changes resulting from traffic increases over time. Data in this report have been assembled in Tables 4, 5, and 6 in a manner to facilitate comparison of alternatives and to observe changes with time.

II. TRAFFIC NOISE PREDICTION

The Federal Highway Administration Traffic Noise Prediction Model is used to compute energy equivalent noise level and 10 percentile noise level at discrete wayside locations. The prediction methodology involves computing noise exposure contributions at specific locations from three distinct classes of vehicles - automobiles, medium trucks, and heavy trucks. The FHWA Model defines these as:

1. Automobile (A) - all vehicles with two axles and four wheels designed primarily for transportation of nine or fewer passengers (automobiles), or transportation of cargo (light trucks). Generally, the gross vehicle weight is less than 10,000 lbs. (4,500 kg.).

2. Medium trucks (MT) - all vehicles having two axles and six wheels designed for the transportation of cargo. Generally, the gross vehicle weight is greater than 10,000 lbs. (4,500 kg.) but less than 25,000 lbs. (12,000 kg.)

3. Heavy trucks (HT) - all vehicles having three or more axles and designed for the transportation of cargo. Generally, the gross weight is greater than 25,000 lbs. (12,000 km.).

Figure 3 contains a graph of reference energy levels used for all three vehicle classes. These levels form the basis for all traffic noise calculations. Specific L_{eq} (1 hr.) and L_{10} (1 hr.) noise levels are obtained through adjustments to reference levels which account for features such as hourly vehicle volume, vehicle speed, vehicle class mix, distance of receiver from the road, ground absorption, barriers, shielding by trees and buildings, and road curvature.

The reference energy levels of Figure 3 display uniform behavior above 50 km/h (30 mph). Below 50 km/h (30 mph) all three classes of vehicles produce noise levels independent of speed. The reference energy for heavy trucks, however, displays rather erratic behavior below 50 km/h (30 mph) because of higher engine rpm normally occurring as a result of truck operation in lower gears. It is impractical to seek any further detail in the low speed operation of trucks because of variations in truck operating characteristics which are related to loading and operator shifting patterns. For heavy truck operations at speeds below 50 km/h (30 mph), the FHWA Traffic Noise Model simply suggests using the maximum truck noise energy reference level since trucks would be most often operating at near peak rpm.

By inspection of Figure 3, one can conclude that the comparison of street designs that involve speeds below and speeds at or above the 50 km/h (30 mph) transition could lead to large heavy truck noise level differences. For example, a proposed street design alternative which will result in average heavy truck speed increase from 40 km/h (25 mph) to 50 km/h (30 mph) could result in a 7 dBA reduction in traffic noise exposure, at least as predicted through the use of this methodology. In reality, one would not expect such an abrupt change in noise level for only a 10 km/hr (6.3 mph) speed change. As a result, it is thought that noise levels predicted for heavy truck speeds below 50 km/h (30 mph) are higher than those actually occurring.

The traffic Noise Prediction Model uses a factor N_iD/S_i (the number of vehicles in a class i times the distance to the travel lane in meters divided by class i vehicle speed, where vehicle class i is either automobiles, medium trucks or heavy trucks) in computing the L_{10} (1 hr.) noise level. It is recommended that when N_iD/S_i is less than 40 m/km that noise assessments utilize the L_{eq} rather than the L_{10} noise level because of observed inaccuracies in predicted L_{10} noise levels using this Model. L_{10} noise levels have been determined for noise exposures at all locations considered in this study and are presented in Tables 4, 5 and 6 for informational purposes only.

The actual implementation of the Traffic Noise Prediction Model has been performed by approximating traffic flow along various roads as straight line traffic lane segments having specific vehicle volumes and speeds within each vehicle class. As can be seen in Figures 1 and 2, this can result in an intricate array of traffic lane segments.

The noise exposure at each study location is the sum of traffic noise contributions from each individual segment. It is readily apparent that the computation of noise exposure at each location from each class of vehicle along each lane segment can constitute an organizational difficulty.

In order to facilitate orderly computation of noise exposures, a traffic noise computation table has been used and is shown in Figure 4. Traffic data for each lane segment, computational adjustments, and geometric data are all combined on this single format. The existing street arrangement shown in Figure 1 has involved 72 lane segment computations to determine noise levels at the 9 locations also indicated in Figure 1. The proposed street arrangement shown in Figure 2 has involved 107 lane segment computations to determine traffic noise exposure at the same 9 locations.

III. TRAFFIC DATA

Earlier New Dudley Street Phase II studies and studies in connection with the Southwest Corridor development have been used by the capacity analysis consultant and by ourselves for the analysis of traffic noise using the FHWA Traffic Noise Prediction Model Traffic data collected in 1978 under these other traffic studies has been used to calculate noise from traffic on the existing street arrangement. Under the above traffic studies, vehicle volumes on the proposed New Dudley Phase II street arrangement have been predicted for 1987. These two traffic volume analyses have been used to predict 2000 Build and 2000 No-Build traffic volumes using assumed traffic growth factors. Tables 1 and 2 contain AM and PM peak hour traffic volumes and speeds along each traffic lane segment.

Inspection of AM and PM peak hour traffic data generally indicates higher traffic volumes on roads during the evening rush hour than during morning rush hour. Hence, traffic noise computations have been conducted for PM peak hour traffic volumes. The automobile, medium truck, and heavy truck traffic volume breakdowns shown are for the PM peak hour traffic and have been used for traffic noise exposure computations. Traffic volumes are such that peak hour traffic volume corresponds to highest hourly noise exposure. Assessing traffic noise exposure based on highest hourly noise exposure is in accordance with FHWA procedure for traffic noise assessment.

The traffic growth factors[1] used for traffic noise prediction are the same as those used in the traffic capacity study performed simultaneously with this work. The traffic volume growth factor, taken from this report, from 1978 to 1987 and from 1987 to 2000 under the existing street arrangement, i.e., the No-Build, are 1.10 and 1.08 respectively. The net growth factor from 1978 to 2000 under the existing street arrangement is then 1.19 (the product of 1.10 and 1.08). The assumed traffic

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1. "Traffic Analysis Study Roxbury Street Phase II- 1987 & 2000" Stanely Siegel, Diversified Engineering Services, 10 Winthrop Rd., Brookline, MA 02146

growth factor under the Build alternative from 1987 to 2000 for PM peak hour traffic conditions is 1.08. Traffic volumes for the 2000 No-Build are simply 1.19 times the segment traffic volumes shown in Table 1. Traffic volumes for the 2000 Build alternative are 1.08 times the segment traffic volumes shown in Table 2.

In terms of traffic noise predictions, for future traffic conditions based on earlier traffic data, using the FHWA Traffic Noise Prediction Model, traffic growth factors in general correspond to simple incremental adjustments to predict L_{eq} (1 hr.) noise levels at each location. This increment to the L_{eq} (1 hr.) is equal to 10 times the logarithm of the growth factor. In the case of the 2000 No-Build, this is an increment of 0.75 dBA to be added to predicted L_{eq} (1 hr.) noise levels for locations under 1978 traffic volumes on the existing street arrangement. In the case of the Build alternative, this is an increment of 0.33 dBA to be added to predicted L_{eq} (1 hr.) noise levels for 1987 traffic volumes under the proposed Phase II street arrangement.

L_{10} (1 hr.) values for 2000 No-Build and 2000 Build Traffic noise exposures are computed from predicted L_{eq} (1 hr.) values for each class of vehicle within each segment. Increases in L_{10} (1 hr.) traffic noise levels which reflect traffic volume growth are not simple adjustments to 1978 (existing) and 1987 Build L_{10} (1 hr.) traffic noise levels. Increases in L_{10} (1 hr.) noise levels require further computations for each class of vehicle within each lane segment affecting each location. The magnitude of resulting L_{10} (1 hr.) increments accounting for traffic growth, however, are very much the same as those used to account for increases in the L_{eq} (1 hr.).

Earlier studies performed for the Boston Redevelopment Authority have shown truck vehicles account for approximately 3% of vehicle volume. Truck mixes used in the companion traffic analysis to this study have used a truck mix of 13%. The companion truck analysis figure includes a broader range of vehicle types, such as light pickup trucks and vans.

In order to obtain the medium and heavy truck mixes of particular relevance to acoustics studies, traffic counts were made for brief periods at Washington Street, Dudley Street, and New Dudley Street locations. Within the medium truck class, motorcycles and gasoline engine school buses have been included together with those vehicles listed under the above medium truck vehicle description. Within the heavy truck class, diesel buses have been included together with those listed under the above heavy truck vehicle description. It has also been generally observed that Southwest Corridor construction activity has not led to a significant increase in truck traffic through the Dudley Phase II study area.

Based on traffic counts made, a medium truck mix of 2½% and heavy truck mix of 2½% have been used for all traffic noise computations. It was also generally observed that speeds for vehicles in all three classes were roughly the same. It has also been assumed that

traffic volume growth does not result in a reduction in peak hour vehicle speeds.

IV. TRAFFIC NOISE ASSESSMENT

Using the traffic data discussed above, the FHWA Traffic Noise Prediction Model, and geometric data from the existing and proposed street layouts of Figures 1 and 2, L_{eq} (1 hr.) (peak hour energy equivalent noise level) and L_{10} (1 hr.) (peak hour 10 percentile noise level) have been computed for the nine locations shown. Locations have been selected to provide an understanding of the change in noise environment that can be expected throughout areas most frequented by pedestrian traffic and at occupied buildings. In accordance with the FHWA land use categorization in Table 3, these locations fall into land use categories B and E. Acceptable levels of traffic noise should then not exceed an L_{eq} (1 hr.) of 67 dBA in usable outside areas such as those which serve as parks, or exceed an interior L_{eq} (1 hr.) of 52 dBA in buildings located immediately adjacent to city streets. Should spaces within these buildings not be provided with air conditioning, forcing occupants to rely on open windows for thermal comfort, then the interior L_{eq} (1 hr.) is equivalent to an exterior L_{eq} (1 hr.) of 62-65 dBA.

Hence, the assessment of traffic noise impact upon Phase II area buildings almost needs a building space by building space survey. It is assumed that those individuals adversely affected by noise produced by street traffic as well as noise from MBTA Orange Line train passbys on Washington Street to be modified or eliminated in the future, aircraft noise, sirens, and general city street activity would be already sought appropriate means of attenuation for their building spaces. It should then be sufficient to assume that land use category B Design Noise Levels are adequate for purposes of evaluating noise exposure.

Tables 4 and 5 contain L_{eq} (1 hr.) and L_{10} (1 hr.) noise levels as determined through the use of the FHWA Traffic Noise Prediction Model. It can be noted that traffic noise levels at roughly half of the locations under each scenario including the existing condition exceed the FHWA design L_{eq} (1 hr.) noise level of 67 dBA. The exceedances are generally within 5 dBA of the design level and therefore it can be concluded that traffic noise exposure presently produces, and will continue to produce, minor noise impact under both Build and No-Build alternatives within the New Dudley Phase II study area.

Since the construction of the proposed New Dudley Phase II plan will not result in a significant increase in traffic through this area, the merits of the Build and No-Build alternatives are most likely better viewed through comparison with one another rather than on an absolute basis through comparison with the FHWA Design Noise Levels. This has been done and organized in Table 6 as the differences between Build and No-Build L_{eq} (1 hr.) and L_{10} (1 hr.) noise levels in the year 2000.

It can be seen from Table 6, that noise levels are lower at five of the nine locations under the Build alternative. Location 6 is expected to experience a significant increase in noise level because of the removal of a building and the construction of the Shawmut Avenue Extension. The largest advantage expected under the Build alternative is a moderate reduction in noise exposure along Dudley Street (west of Washington Street) because of an expected shift in traffic usage.

The contrary behavior of the L_{10} (1 hr.) noise levels vis-a-vis the L_{eq} (1 hr.) as seen in Table 6 is a result of differences between alternatives as they relate to distances to nearby road segments from receptor locations. Through the traffic noise analysis, it has been determined that truck noise dominates traffic noise exposure at all locations and,since the factor ND/S for trucks is most often less than 40 m/km, the use of L_{10} (1 hr.) noise levels for providing an accurate comparison of Build and No-Build alternatives is not warrented

It can also be observed in the Build traffic volume data used, that vehicle speeds through the study area have been assumed to be less in many lane segments than those assumed for the No-Build alternative. This is a result of an increase in the number of lane intersections which act to facilitate traffic flow through the study but which are thought to slightly decrease vehicle speed. It has been assumed that this will result in a change in vehicle speed from 50 km/h (30 mph) to 40 km/h (25 mph) along many segments. As can be seen from Figure 3, this acts to increase heavy truck noise significantly. As the increase depicted in Figure 3 is more than what realistically would be expected, L_{eq} (1 hr.) noise level predictions for 2000 Build traffic are likely conservatively high.

In addition, city street reverberation which can significantly reinforce traffic noise exposure has not been accounted for in this analysis. The removal of building structures under the Build alternative will act to significantly reduce existing city street reverberation thus further reducing traffic noise levels under the Build alternative from those that can be expected under the No-Build.

V. CONSTRUCTION NOISE ASSESSMENT

Chief sources of construction related noise are expected to be hand held and backhoe mounted pneumatic and hydraulic impact hammers. Noise levels vary from 88 dBA to 92 dBA at 15 meters (50 feet) for typical impact hammer devices used in road construction projects. These will be used primarily during street demolition, utilities relocation, and to a lesser extent during building demolition.

The U.S. Environmental Protection Agency has enacted regulations limiting average noise emissions from portable air compressors (40 CFR 204) to 76 dBA at 7 meters (25 feet). As pneumatic

impact hammers are used intermittantly and since accompanying compressors are most often allowed to operate continuously, some benefit to nearby building occupants would be received if only air compressors manufactured in accordance with 40 CFR 204, i.e. those manufactured after July 1, 1978, were employed.

More than likely, the second most significant source of construcion noise is backhoes, particularly telescoping hydraulic types. Based on our experience these typically produce noise levels of 80 to 82 dBA and are generally operated at a constant high engine rpm setting corresponding to maximum sound energy emission. It can be expected that these machines will be used extensively throughout construction

Other sources of noise include trucks, cranes, dozers, pavers, rollers, etc. Although, there may be specific instances where these other machines may produce high levels of noise at occupied buildings, the overall effect is not expected to be as nearly significant as that produced by impact hammers, air compressors, and backhoes which are noisier and are expected to be used more extensively during the course of construction.

Although very elaborate noise control procedures could be introduced to minimize noise exposure, it is expected that the most efficient and effective means for controlling construction noise is through implementation of the following:

1. Construct portable sound barriers around jackhammer locations where occupied buildings with open windows are within 30 meters (100 feet) of impact hammer locations.

2. Require the contractor to use air compressors meeting the requirements 40 CFR 204. Compliance with this law is most easily identified by the presence of a sticker stating compliance which should be located near the operator station.

3. Require the contractor to use backhoe equipment for which the average of the two highest A-weighted noise levels measured at 15 meters (50 feet) distance from all four sides of the machine does not exceed 82 dBA.

4. Require the contractor to use impact hammer devices that produce a noise level of not more than 88 dBA at a distance of 15 meters (50 feet).

5. Require the contractor to provide a weekly schedule of construction activities and to advise building occupants one week in advance of any unavoidable noisy activities expected to occur. This includes impact hammering within 30 meters (100 feet) of buildings and backhoe excavation within 15 meters (50 feet) of occupied buildings.

6. Bidding contractors should also be advised that construction activities are subject to Regulations for the Control of Noise in the City of Boston.

7. In order to facilitate successful implementation of these recommendations, it is suggested that the Boston Redevelopment Authority oversee the performance of contractors in order to assure that whatever steps are needed to mitigate excessive construction noise exposure in accordance with specification requirements are taken.

8. Of most importance, the contract documents must clearly enumerate each noise control requirement. With the exception of the City of Boston regulations, failure to include noise control requirements in contract documents relieves the contractor of any obligation towards minimizing construction noise exposure.

The recommendations above are provided in accordance with FHWA requirements for the control of highway construction noise (23 CFR 772.23).

VI. CONCLUSIONS

An analysis of traffic noise under existing conditions and under future Build and No-Build alternatives to the New Dudley Street Phase II development has been undertaken. The analysis has accommodated all major features related to noise exposure including traffic vehicle volumes, truck mix, speed, shielding of noise by buildings, the removal of buildings, and changes in street alignments. Although it is difficult to predict traffic noise levels in city environments such as in the New Dudley Phase II study area, the Model does offer a good means to compare various road alternatives.

From the FHWA Traffic Noise Prediction Model, it has been concluded that noise levels under 2000 Build and No-Build alternatives at seven of nine represenative locations studied will differ by less than ± 2 dBA which corresponds to a slight difference in noise exposure. At location 9, the direction of traffic under the 2000 Build alternative is expected to result in a 3.9 dBA lower noise level than that expected under the 2000 No-Build.

On the otherhand, noise levels at location 6, adjacent to the Day Care Center, have been computed to be 12.6 dBA higher under the 2000 Build alternative than that expected under the No-Build alternative. This increase is a result of removing the Post Office building which presently provides some shielding to the Day Care Center from noise produced by traffic on area streets. The greatest portion of this increase, however, results from the traffic on the Shawmut Avenue Extension under the Build alternative. It is

likely that the actual increase in noise level under the 2000 Build alternative would be 2 dBA to 3 dBA less than levels computed because the traffic noise model used tends to provide conservatively high estimates of noise from traffic at low speeds, this is particularly true for truck traffic which is an important factor in this analysis. Inspite of the sizable increase in noise level expected under the 2000 Build alternative at location 6, traffic noise exposures under the proposed New Dudley Street Phase II Development will be generally within the FHWA Design Noise Level for category B type land use.

Construction noise, although possibly being excessive in specific instances, can be controlled through the use of quiet equipment, and through the use of portable barriers and screens. It has been recommended that contract documents require contractor efforts to control noise and that the Boston Redevelopment Authority take steps toward insuring contractor compliance with contract document noise control provisions.

TABLE 1. EXISTING VEHICLE VOLUMES
BASED ON 1978 TRAFFIC COUNTS

Road Segment	Peak Hour Traffic Volumes		PM Peak Hour Traffic Volumes			Speed
	AM (vph)	PM (vph)	A (vph)	MT (vph)	HT (vph)	(km/h
U-A1	518	512	486	12.8	12.8	40
A1-A2	85	47	44.7	1.2	1.2	40
A2-C1	85	47	44.7	1.2	1.2	40
C1-D1	406	400	380	10.0	10.0	50
V-D1	295	817	776	20.4	20.4	40
D1-W	701	1217	1156	30.4	30.4	50
Z-B1	495	637	605	15.9	15.9	50
B1-B2	430	557	529	13.9	13.9	40
B2-B3	727	852	809	21.3	21.3	40
B3-Y	1008	991	942	24.8	24.8	50
X-B2	354	295	280	7.4	7.4	50
A1-B4	433	465	442	11.6	11.6	40
B4-B5	193	368	350	9.2	9.2	30
B5-X	228	413	392	10.3	10.3	50
B4-B6	231	258	245	6.5	6.5	40
B6-C1	321	353	335	8.8	8.8	40
B5-B6	57	56	53.2	1.4	1.4	30
B1-B6	30	35	33.3	0.9	0.9	30
B1-B7	35	45	42.8	1.1	1.1	30
Y-B4	272	356	338	8.9	8.9	50
B4-B3	231	258	245	6.5	6.5	30

TABLE 2. 1987 VEHICLE TRAFFIC VOLUME
Build Alternative

Road Segment	Peak Hour Traffic Volumes		PM Peak Hour Traffic Volumes			Speed
	AM (vph)	PM (vph)	A (vph)	MT (vph)	HT (vph)	(km/h
U-D1	496	650	618	16	16	40
D1-A5	131	225	213	6	6	50
D1-B1	365	430	419	11	11	40
V-A1	480	980	930	25	25	50
A1-A2	200	580	550	15	15	30
A1-A3	130	220	209	5.5	5.5	50
A2-W	1031	1160	1102	29	29	50
W-A3	770	730	694	18	18	50
A3-C1	180	275	261	6.9	6.9	50
A3-A4	720	665	631	17	17	50
A4-B2	870	845	803	21	21	50
A5-A2	651	745	707	19	19	50
C1-X	450	610	580	15	15	40
X-C2	480	405	385	10	10	40
C2-A2	350	190	180	4.8	4.8	50
C2-B2	1220	1035	983	26	26	40
B2-B3	1220	1035	983	26	26	50
B3-Y	1410	1240	1178	31	31	50
Y-B4	615	635	603	16	16	50
B4-A5	520	520	491	13	13	50
B4-B5	95	115	109	2.9	2.9	40
B5-4	270	335	318	8.4	8.4	40
B1-B3	190	205	195	5.0	5.5	30
B1-B5	175	220	184	5.5	5.5	40
A1-A4	150	180	171	4.5	4.5	30
Z-E1	150	180	171	4.5	4.5	50

A - Automobile

MT - Utility Vehicles Under 10,000 lbs. GVW, Gasoline Buses,

HT - Utility Vehicles Over 10,000 lbs. GVW, Diesel Buses

TABLE 3. DESIGN NOISE LEVEL/ACTIVITY RELATIONSHIPS[1]

Activity Category	Design Noise Levels[2]		Description of Activity Category
	L_{eq} (1 hr.)	L_{10} (1 hr.)	
A[3]	57 (Exterior)	60 (Exterior)	Tracts of land in which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. Such areas could include amphitheaters, particular parks or portions of parks, open spaces, or historic districts which are dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
B[3]	67 (Exterior)	70 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, and parks which are not included in category A and residences, motels, hotels, public meeting rooms, schools, churches, libraries, and hospitals.
C	72 (Exterior)	75 (Exterior)	Developed lands, properties or activities not included in Categories A or B above.
D	--	--	For requirements on undeveloped lands see 23 CFR 772.19 (a) and (c).
E[4]	52 (Interior)	55 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

1. Adapted from 23 CFR 772.13 (a)

2. Either L_{10} or L_{eq} (but not both) design noise levels may be used on a project.

3. Parks in Categories A and B include all such lands (Public or private) which are actually used as parks as well as those public lands officially set aside or designated by a governmental agency as parks on the date of public knowledge of the proposed highway project.

4. For use of building locations where the exterior environment is of no special significance and where building exterior construction sound alternative measures are available including air conditioning to enable occupants to maintain closed windows to achieve an acceptable interior acoustical environment.

TABLE 4. CALCULATED PEAK HOUR ENERGY EQUIVALENT NOISE LEVEL - L_{eq} (1HR.)

LOCATION	EXISTING	2000 NO-BUILD	1987 BUILD	2000 BUILD
1	69.6	70.4	70.3	70.6
2	70.0	70.8	69.4	69.7
3	66.5	67.3	66.7	67.0
4	68.7	69.5	67.5	67.8
5	67.5	63.3	68.4	68.7
6	56.7	57.5	69.8	70.1
7	65.4	66.2	64.4	64.7
8	70.7	71.5	72.2	72.5
9	57.5	58.3	55.1	55.4

TABLE 5. CALCULATED PEAK HOUR TEN PERCENTILE NOISE LEVEL - L_{10} (1HR.)

LOCATION	EXISTING	2000 NO-BUILD	1987 BUILD	2000 BUILD
1	67.3	68.2	68.4	68.8
2	68.6	69.5	67.4	67.9
3	67.2	67.9	68.0	68.4
4	67.4	68.3	68.9	69.3
5	68.7	69.5	69.1	69.5
6	59.9	60.8	71.5	71.9
7	65.9	67.7	65.6	66.0
8	69.6	70.5	73.0	73.3
9	59.1	59.9	53.5	53.9

TABLE 6. NOISE IMPACT ON BUILD ALTERNATIVE RELATIVE TO NO-BUILD IN 2000 (BASED ON CALCULATED PEAK HOUR L_{eq} AND L_{10})

LOCATION	L_{eq} (lhr.)	L_{10} (lhr.)
1	+0.2	+0.6
2	-1.1	-1.6
3	-0.3	+0.3
4	-1.7	+1.0
5	+0.4	0
6	+12.6	+11.1
7	-1.5	-1.7
8	+1.0	+2.8
9	-8.9	-10.4

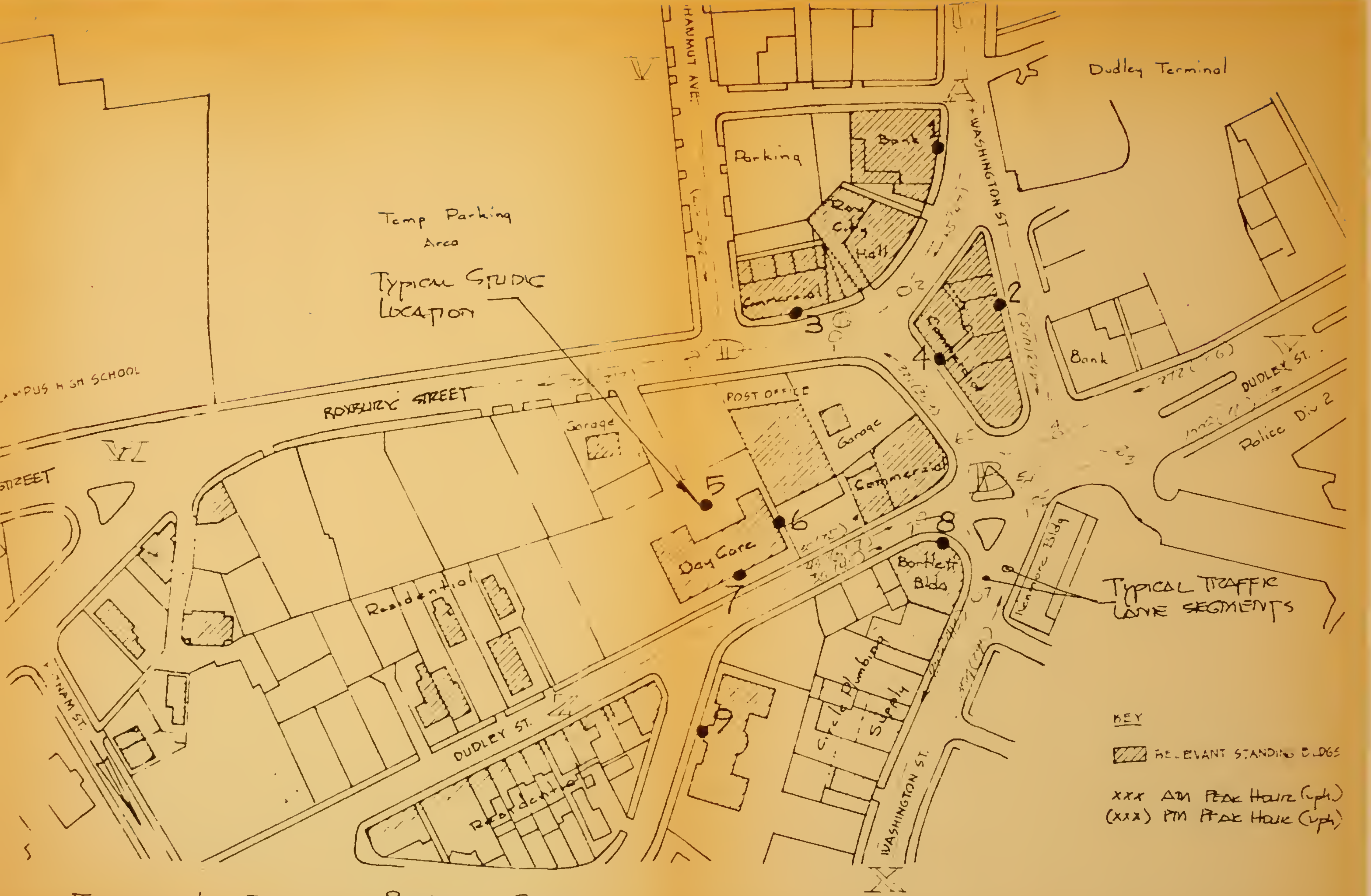


FIGURE 1. EXISTING ROXBURY STREET
(NO-BUILD ALTERNATIVE)

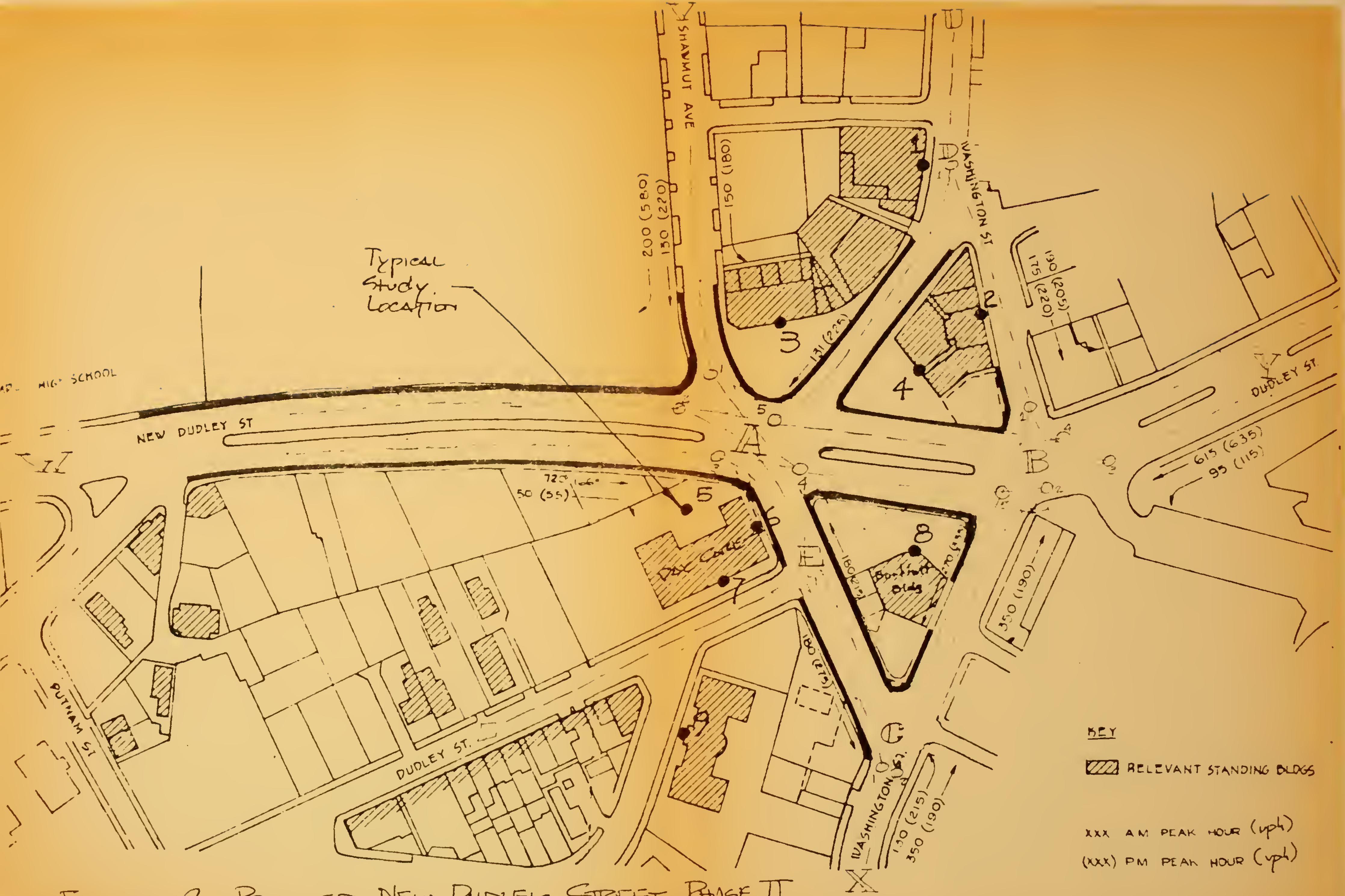
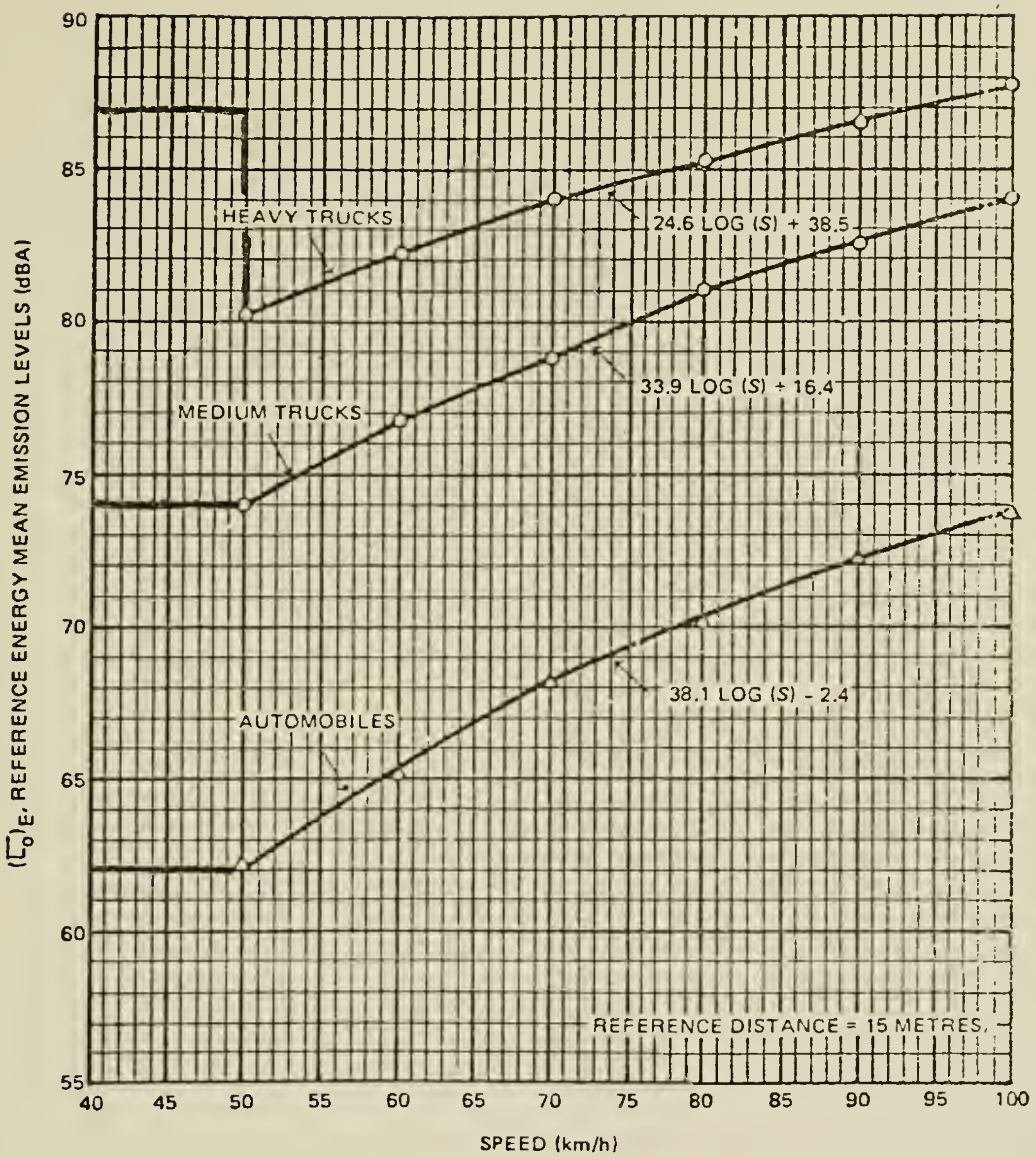


FIGURE 2. PROPOSED NEW DUDLEY STREET PHASE II DEVELOPMENT (BUILD ALTERNATIVE)



○ SOURCE: "Statistical Analysis of FHWA Traffic Noise Data," FHWA-RD-78-64

Δ SOURCE: "Update of TSC Highway Traffic Noise Prediction Code (1974)," FHWA-RD-77-19

FIGURE 3. FHWA REFERENCE ENERGY NOISE LEVELS

NAME ____________________ PROJECT DESCRIPTION ____________________

DATE ____________________

1.	LANE NO./ROAD SEGMENT																			
2.	VEHICLE CLAS.		A	MT	HT	A	MT	HT	A	MT	HT	A	MT	HT	A	MT	HT	A	MT	HT
3.	N(vph)																			
4.	S(km/h)																			
5.	D(m)																			
6.	ϕ_1 (degrees)																			
7.	ϕ_2 (degrees)																			
8.	$(\overline{L_o})_{E_i}$ (dBA)	Fig. 2																		
9.	10 LOG $(N_i D_o / S_i)$ (dB)																			
10a.	10 LOG (D_o/D) (dBA)																			
10b.	15 LOG (D_o/D) (dBA)																			
11a.	10 LOG $(\psi_o(\phi_1, \phi_2)/\pi)$ (dBA)																			
11b.	10 LOG $(\psi_{1/2}(\phi_1, \phi_2)/\pi)$ (dBA)	Fig. 7																		
12.	ϕ_L (degrees)	Fig. 10																		
13.	ϕ_R (degrees)	Fig. 10																		
14.	δ_o (metres)	Fig. 9																		
15.	N_o	Eq. 18																		
16.	Δ_B (dBA)	Appendix B																		
17.	CONSTANT (dB)		-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25
18.	$L_{eq}(h)$ (dBA)																			
19.	$L_{eq}(h)$ (dBA)																			
20.	Δ_s (dBA)	Fig. 8																		
21.	$L_{eq}(h)$ (dBA)																			
22.	$L_{eq}(h)$ (dBA)																			
23.	ND/S (m/km)																			
24.	$(L_{10}-L_{eq})_i$ (dB)	Fig. 15																		
25.	$L_{10}(h)_i$ (dBA)																			
26.	$L_{10}(h)$ (dBA)																			
27.	$L_{10}(h)$ (dBA)																			

Table 1. Noise Prediction Worksheet

FIGURE 4. NOISE PREDICTION WORKSHEET
(FROM FHWA RD-77-108)

Report No. 4408

NEW DUDLEY STREET, PHASE II: AIR QUALITY IMPACT ASSESSMENT

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June 1980

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EXECUTIVE SUMMARY

The air quality impact assessment of the New Dudley Street, Phase II project consists of a microscale analysis of carbon monoxide (CO) concentrations at sensitive receptor locations and a description of construction impacts. A diffusion modeling analysis was performed to estimate CO concentrations at sensitive receptors for existing (1978) conditions, No Build conditions in 1987 and 2000, and Alternative A in 1987 and 2000. The air quality impact was assessed by comparing the modeling predictions with applicable Massachusetts and Federal ambient air quality standards.

For existing (1978) conditions, no violation of the 1-hr CO standard of 35 parts per million (ppm) was predicted. The 8-hr CO standard of 9 ppm was predicted to be exceeded at almost all receptor locations. In 1987, the year Massachusetts must demonstrate attainment of the standards, no violations of either the 1-hr or 8-hr standard were predicted for either the No Build or Alternative A. Similarly, no violations of the CO standards were predicted in 2000. The modeling analysis indicates that concentrations with Alternative A are lower at most receptors relative to the No Build. Concentrations at the Hawthorne Day Care Center would be essentially the same or improved with Alternative A.

Construction and demolition activities can result in short-term impacts on ambient air quality. Emissions from automobiles detoured or transporting workers were judged to be of negligible effect. Compliance with Massachusetts regulations concerning

hazardous air pollutants, demolition, and fugitive dust would minimize the remaining potential air quality impacts. Mitigation measures for controlling fugitive dust are also suggested.

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A-1. The fraction of total vehicle registration for different vehicle categories distributed by age of vehicles A-1

1. INTRODUCTION

1.1 Study Objective

The objective of this study is to assess the air quality impact of the completion of New Dudley Street between Roxbury Street and Washington Street in the Roxbury section of Boston, Massachusetts.

1.2 Scope and Approach

The analysis of the air quality impact consists of a microscale analysis estimating carbon monoxide (CO) levels at various sensitive receptor locations in the project area and describing the impact during construction.

The microscale analysis was conducted for five cases:

- 1978 — Existing Conditions
- 1987 No Build
- 1987 Alternative A
- 2000 No Build
- 2000 Alternative A.

Alternative A was the only construction alternative considered in the study.

Section 2 summarizes the existing conditions in the project area with respect to air pollution meteorology and ambient air quality. The air quality impact assessment is presented in Sec. 3, and mitigation measures are presented in Sec. 4. The

analysis methods and input data are described in Appendix A, and the air quality standards for CO are outlined in Appendix B to this Appendix A of the Environmental Reassessment.

2. EXISTING CONDITIONS

2.1 Air Pollution Meteorology in the Project Area

The meteorological parameters that affect the transport and dispersion of airborne pollutants include wind direction, wind speed, and the stability of the atmosphere. The prevailing wind direction dictates the general direction of movement of the airborne pollutants. Low wind speeds and calm conditions are conducive to buildup of pollutant concentrations. The stability of the atmosphere affects the dilution or the mixing rate of the air containing the pollutant. Calm conditions cause poor dispersion and resulting higher concentrations, whereas an unstable atmosphere promotes both vertical and horizontal mixing. Surface wind data from the National Weather Service station at Boston's Logan Airport show that winter winds are predominantly from the northwest quadrant at an average speed of 14 mph [*1,2*].

Meteorological parameters also affect emissions, especially from mobile sources. Emissions of CO, NO_x, and HC all increase with a decrease in ambient temperature. Thus, emissions from vehicular sources are highest during the winter. Historical temperature data from the Boston area show mean minimum January temperatures around 20°F and mean maximum January temperatures just above 32°F [*2*].

2.2 Existing Ambient Air Quality

In 1979, CO concentrations were monitored at three sites in the Boston area by the Massachusetts Department of Environmental Quality Engineering (DEQE). The data, shown in Table 1, indicate that violations of the 8-hr CO standard remain a problem in

greater Boston. There were 48 recorded violations of the 8-hr standard at the three locations. There were no recorded violations of the 1-hr standard.

There are no historical air quality data from the project area or any of the surrounding neighborhoods. In a preliminary meeting with DEQE it was determined that no measurement program would be necessary prior to this study.

TABLE 1. MEASURED CO CONCENTRATIONS IN METROPOLITAN BOSTON — 1979.

Site	Concentrations in Parts per Million (ppm)			
	Maximum 1-hr	No. of Times > Standard*	Maximum 8-hr	No. of Times > Standard*
Kenmore Square	20	0	15	4
Wellington Circle	25	0	20	13
Callahan Tunnel	25	0	15	31

*The Federal and Massachusetts 1-hr CO standard is 35 ppm, not to be exceeded more than once per year. The corresponding 8-hr standard is 9 ppm.

3. AIR QUALITY IMPACT ASSESSMENT

3.1 Microscale Analysis: CO Levels at Selected Receptor Locations

We estimated CO concentrations at selected receptors near intersections in the project area to determine the impact on air quality of the completion of New Dudley Street between Roxbury and Washington Streets. Using the modeling approach described in Appendix A, maximum 1-hr and 8-hr CO concentrations at the receptors were estimated for the existing (1978) condition, 1987, and 2000. The accepted method for determining the impact on CO levels is to ascertain predicted maximum 1-hr and 8-hr CO concentrations at selected receptor locations and then to compare these predicted values with the Massachusetts and Federal ambient air quality standards.

CO concentrations were estimated at 20 receptor locations for the existing and future No Build conditions. Two of these receptors are adjacent to the Hawthorne Day Care Center, while the remaining receptors are located along sidewalks in the eastern end of the project area as shown in Fig. 1. Future concentrations with Alternative A were predicted at the 22 receptor locations shown in Fig. 2. The 17 numbered receptor locations, including the two at the Hawthorne Day Care Center, have the same location for both Alternative A and the No Build conditions. The remaining receptor locations are not common because of the realignment of the street system under Alternative A.

Estimated maximum 1-hr CO concentrations for all analysis cases are shown in Table 2. These concentrations include a background 1-hr level of 4 ppm in 1978, 1.5 ppm in 1987, and

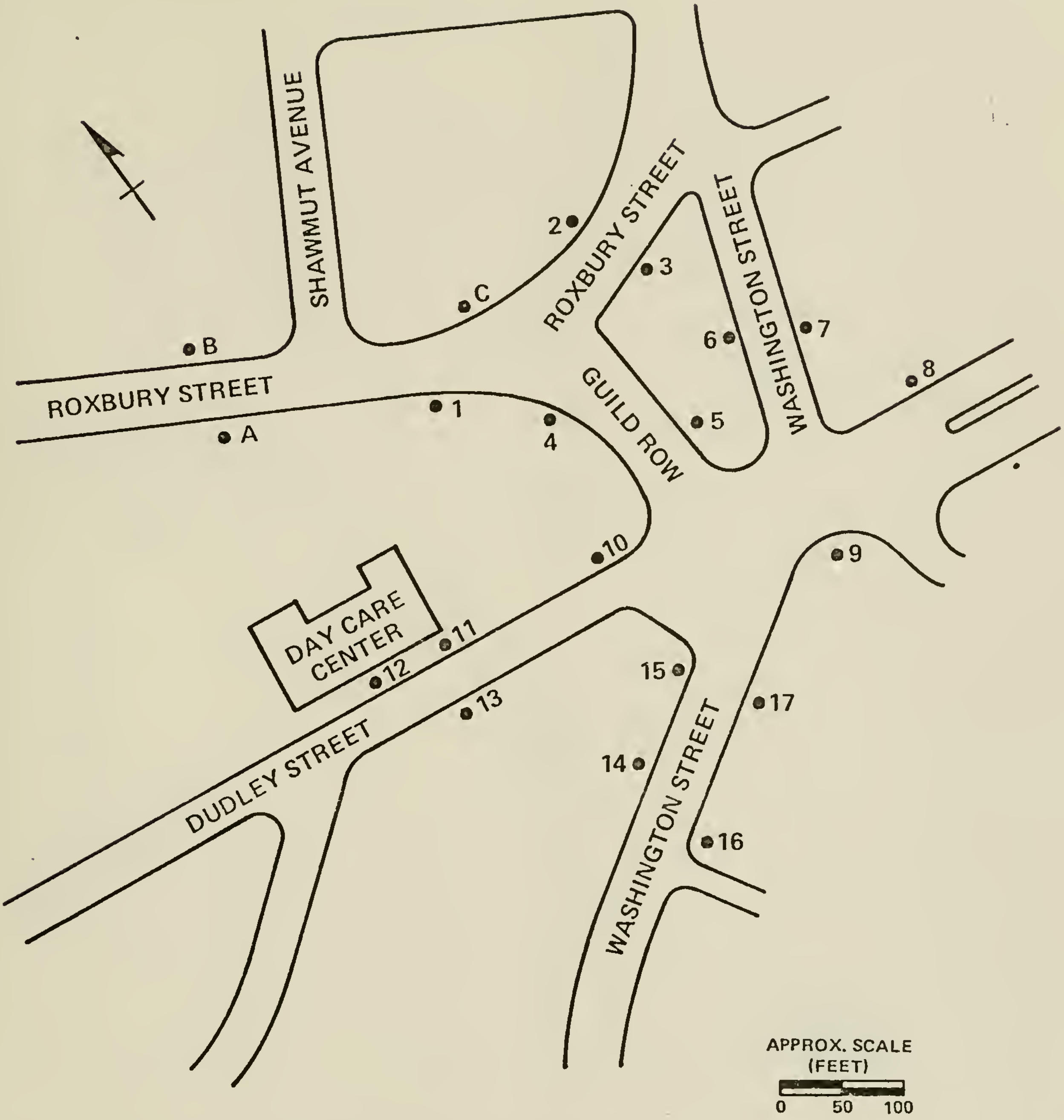

FIG. 1. NO BUILD RECEPTOR LOCATIONS.

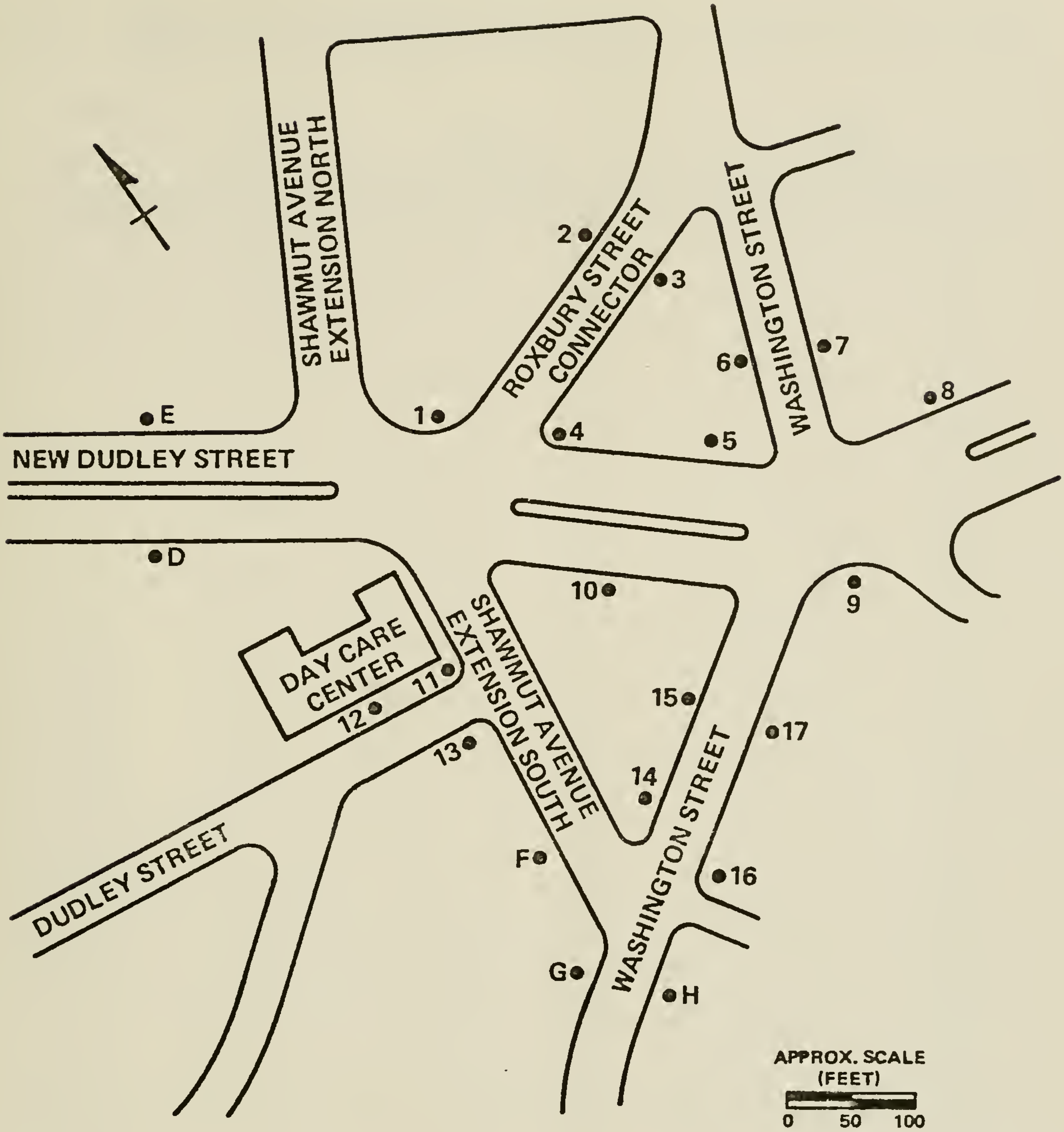

FIG. 2. ALTERNATIVE A RECEPTOR LOCATIONS.

TABLE 2. MODELING PREDICTIONS OF MAXIMUM 1-HR CO CONCENTRATIONS IN PARTS PER MILLION AT SELECTED RECEPTORS.

Receptor	1978	1987		2000	
	Existing	No Build	Alternative A	No Build	Alternative A
1	28.5	8.8	13.4	5.7	8.0
2	9.0	3.2	8.9	2.1	5.7
3	4.7	2.7	8.7	1.9	5.5
4	15.9	5.1	11.7	3.3	7.5
5	21.0	12.2	12.8	8.9	7.9
6	23.0	11.1	7.8	8.1	5.0
7	29.9	13.6	11.0	9.6	6.9
8	29.3	13.7	11.1	9.6	6.9
9	26.1	15.9	9.8	11.4	6.1
10	28.0	16.7	12.3	12.3	7.7
11	28.6	14.2	8.3	9.9	5.5
12	28.4	11.0	9.9	7.4	6.5
13	28.0	12.6	7.5	8.7	4.9
14	20.9	11.3	5.6	8.2	3.7
15	21.5	12.6	7.7	9.1	5.0
16	20.6	9.6	5.6	7.0	3.7
17	22.1	11.5	7.9	8.2	5.0
A	25.5	8.2	NA*	5.3	NA
B	17.1	5.5	NA	3.6	NA
C	23.1	7.7	NA	5.1	NA
D	NA	NA	9.6	NA	6.1
E	NA	NA	12.1	NA	8.3
F	NA	NA	4.9	NA	3.2
G	NA	NA	6.4	NA	4.2
H	NA	NA	7.2	NA	4.7

*Not Applicable. These receptor locations are used for trends analysis only. Their specific locations preclude them from meaningful comparisons under different project alternatives.

1 ppm in 2000. The results indicate that the 1-hr CO standard of 35 ppm would not be exceeded at any of the receptors analyzed. The maximum 1-hr concentration predicted for 1978 was 30 ppm, decreasing to 17 ppm in 1987 and to 12 ppm by 2000. These maximum concentrations are all predicted for the No Build case at receptors close to the intersection of Dudley and Washington Streets. Congested conditions, especially on the Dudley Street eastbound approach to the intersection, are the likely cause of these concentrations.

For future years the concentrations at most receptors are somewhat lower with Alternative A. At receptors 1 through 5, the No Build condition would result in lower concentrations. This result is attributable to significant physical changes to the streets with Alternative A. With the No Build condition, these receptors are adjacent to streets with traffic that is uninterrupted by stop signs or traffic lights. With Alternative A, these same receptors are adjacent to approaches to signalized intersections and, as such, might be expected to show somewhat higher concentrations because of excess emissions from vehicles stopped at the intersection. None of these concentrations exceed 14 ppm. Estimated concentrations at the Hawthorne Day Care Center are less with Alternative A than with the No Build.

The maximum 1-hr concentrations predicted for Alternative A are dependent on the implementation of parking restrictions during the afternoon rush hour to maintain reasonable traffic flow throughout the study area. Specifically, a no parking restriction was assumed along the Roxbury Street Connector, the Washington Street southbound approach to Dudley Street, New Dudley Street eastbound approaching Shawmut Avenue and continuing to

Washington Street, and Dudley Street westbound approaching Washington Street and coninuing to Shawmut Street. With these restrictions, sufficient capacity on these approaches was assumed to be available to handle the projected traffic volumes.

Estimated maximum 8-hr CO concentrations for all five analysis cases are shown in Table 3. Where approach capacity was not exceeded, the 8-hr CO concentrations were obtained by scaling directly from the maximum 1-hr concentrations. In cases where the approach capacity was exceeded during the peak hour, a more detailed examination of average 8-hr traffic volumes was made. The results indicate that the 8-hr CO standard of 9 ppm would be exceeded under 1978 conditions but not under any of the future conditions. The maximum concentration predicted for 1978 is 19.7 ppm, which is over twice the standard. These violations of the standard reflect the volume of traffic and congestion in the area around the intersection of Washington and Dudley Streets.

For future years the highest concentrations predicted are 8.8 ppm in 1987 and 5.9 ppm in 2000. The concentrations at just over one-half of the receptors are lower with Alternative A. In cases where the Alternative A concentrations are higher, this result is generally a consequence of the Alternative A receptors being located adjacent to an approach to an intersection and the No Build receptors being located adjacent to free flow or mid-block conditions. Concentrations in the vicinity of the Hawthorne Day Care Center are essentially the same or show some improvement with Alternative A.

TABLE 3. MODELING PREDICTIONS OF MAXIMUM 8-HR CO CONCENTRATIONS IN PARTS PER MILLION AT SELECTED RECEPTORS.

	1978	1987		2000	
Receptor	Existing	No Build	Alternative A	No Build	Alternative A
1	18.8	5.8	8.8	3.8	5.3
2	5.9	2.1	5.9	1.4	3.8
3	3.1	1.8	5.7	1.3	3.6
4	10.5	3.4	7.7	2.2	5.0
5	13.9	8.1	8.4	5.9	5.2
6	15.2	5.7	5.1	4.0	3.3
7	19.7	7.3	7.3	5.0	4.6
8	19.3	6.9	7.3	4.8	4.6
9	17.2	7.5	6.5	5.1	4.0
10	18.5	7.9	8.1	5.5	5.1
11	18.9	7.2	5.5	4.8	3.6
12	18.7	6.4	6.5	4.2	4.3
13	18.5	6.7	5.0	4.4	3.2
14	13.8	5.7	3.7	4.0	2.4
15	14.2	6.1	5.1	4.2	3.3
16	13.6	5.1	3.7	3.6	2.4
17	14.6	5.8	5.2	4.0	3.3
A	16.8	4.4	NA*	2.8	NA
B	11.3	2.6	NA	1.7	NA
C	15.2	4.1	NA	2.7	NA
D	NA	NA	6.3	NA	4.0
E	NA	NA	8.0	NA	5.5
F	NA	NA	3.2	NA	2.1
G	NA	NA	4.2	NA	2.8
H	NA	NA	4.8	NA	3.1

*Not Applicable. These receptor locations are used for trends analysis only. Their specific locations preclude them from meaningful comparisons under different project alternatives.

In summary, the results of this analysis for future years indicate that no violations of either the 1-hr or 8-hr CO standard are expected with either alternative. The results also indicate that concentrations with Alternative A are lower at most receptors relative to the No Build. Concentrations at the Hawthorne Day Care Center would be essentially the same or somewhat improved with Alternative A.

3.2 Construction Impact

Construction-related activities can result in short-term impacts on ambient air quality. The sources of emissions associated with construction of New Dudley Street, Phase II are construction equipment, automobile traffic, demolition, and various earth moving, grading, and vehicle travel on dirt surfaces.

Heavy-duty construction equipment is mainly diesel and gasoline powered. The rate of emissions from these engines is a function of engine size and the load on the engine. In terms of emissions per unit of fuel consumed, gasoline engines produce much more CO, while diesel engines produce more nitrogen oxides. Compared with emissions from other automotive sources in the area, emissions from the construction equipment are expected to be insignificant and would not adversely affect local air quality.

Another source of emissions is automobile traffic related to the transportation of construction workers to and from the site, and to the potential disruption of existing traffic by construction activity. During part of the construction activity, traffic would be detoured around the project area. The detour

route selected would minimize additional congestion on adjacent streets and would be for the shortest possible time period. The detouring is not expected to cause a significant increase in vehicle emissions in the area. Measured against existing traffic volumes in the area, increased emissions resulting from transportation of workers would not be significant.

Prior to construction, 9 buildings would be demolished in the project area. The demolition activity has the potential for emissions of fugitive dust and asbestos insulating material. The demolition contractor must comply with Massachusetts regulation 310 CMR 7.02(14), which controls emissions of friable asbestos material. The contractor must inspect all buildings to determine whether or not asbestos insulating material is present. If asbestos is found, written notification to DEQE prior to demolition is required, and if certain amounts are present, special handling procedures are required. Compliance with this regulation would ensure no adverse impacts from demolition activity.

The particulate or fugitive dust emissions from the site have potential for substantial short-term impacts. Fugitive dust emissions would occur during demolition activity, ground excavation, stockpiling of material, movement of equipment on site, and transport of material to and from the site. Fugitive dust would generally be a problem during periods of intense activity and would be accentuated by windy and/or dry conditions.

The quantity of dust emissions from construction activities has been estimated at a monthly rate of 1.2 tons per acre of construction activity. Although more appropriate for a drier

climate, the estimate gives an upper limit of 36 tons of emissions over the 1-yr construction period on the 2.5 acre site. The annual emissions, however, are not as major a concern as the peak short-term emissions that can occur when proper controls are not used. Compliance with Massachusetts' fugitive dust regulation 310 CMR 7.09 requires measures to mitigate fugitive dust emissions and would minimize adverse air quality impacts. Candidate mitigation measures are identified in the following section.

4. MITIGATION MEASURES

4.1 Demolition and Construction

During demolition and construction activities, extreme care must be taken to mitigate fugitive dust emissions. All stockpiled materials should be covered or watered. All roads on the site should be paved, watered, or chemically treated to limit emissions. Equipment leaving the site should be inspected, and if necessary, washed down. When transporting material likely to become airborne, trucks should be covered. Whenever possible, idling construction equipment should be turned off when not in use. Finally, if equipment must remain running, it should be stored in areas as far as possible from sensitive areas such as the Hawthorne Day Care Center.

REFERENCES

1. "Climatic Atlas of the United States," U.S. Department of Commerce, National Oceanic and Atmospheric Administration, 1979.

2. "Comparative Climatic Data for the United States Through 1978," U.S. Department of Commerce, National Oceanic and Atmospheric Administration, 1979.

APPENDIX A: ANALYSIS METHODS AND INPUT DATA

To assess the air quality impact of New Dudley Street, Phase II, we estimated emissions of CO from all motor vehicles in the project area. From these emissions, we estimated the maximum 1-hr and 8-hr ambient CO concentrations at selected receptors and compared these estimates with applicable Massachusetts and Federal standards. This appendix describes the modeling techniques and the input data used to estimate the emissions and the resulting concentrations.

A.1 Estimating Emissions from Automobile Sources

To estimate emissions from automobile sources, emission factors as compiled in EPA's Mobile Source Emission Factors document [*A.1*] were used. The computation procedures were implemented by the use of a computer program from EPA's Office of Transportation and Land Use Policy [*A.2*]. To make these emission factors more specific to the analysis of New Dudley Street, Phase II, a number of correction factors were applied.

Vehicle Registration Data

Vehicle registration data for the light-duty vehicle class (comprising all of the private passenger automobiles) showing distribution of the vehicle population by age, as used by the EPA procedure, were replaced by registration data that pertained to Massachusetts. These data, which were provided by DEQE, are shown in Table A.1, along with national registration data for the other vehicle classes. The Massachusetts data show that the automobile population is generally "older" compared with the national average. (About 45% of the automobiles in Massachusetts are five years old or less; 50% is the national average.)

TABLE A.1. THE FRACTION OF TOTAL VEHICLE REGISTRATION FOR DIFFERENT VEHICLE CATEGORIES DISTRIBUTED BY AGE OF VEHICLES.

Age of Vehicles (years)	Light-Duty Vehicles	Light-Duty Trucks < 6000 lb	Light-Duty Trucks 6000 to 8500 lb	Heavy-Duty Gasoline	Heavy-Duty Diesel	Motorcycle
1	0.072	0.061	0.037	0.037	0.077	0.105
2	0.089	0.095	0.070	0.070	0.135	0.225
3	0.078	0.094	0.078	0.078	0.134	0.206
4	0.102	0.103	0.086	0.086	0.131	0.149
5	0.113	0.083	0.075	0.075	0.099	0.097
6	0.104	0.076	0.075	0.075	0.090	0.062
7	0.089	0.076	0.075	0.075	0.082	0.046
8	0.086	0.063	0.068	0.068	0.062	0.033
9	0.072	0.054	0.059	0.059	0.045	0.029
10	0.063	0.043	0.053	0.053	0.033	0.023
11	0.043	0.036	0.044	0.044	0.025	0.008
12	0.034	0.024	0.032	0.032	0.015	0.005
13	0.023	0.030	0.038	0.038	0.013	0.013
14	0.013	0.028	0.036	0.036	0.011	0.000
15	0.007	0.026	0.034	0.034	0.010	0.000
16	0.004	0.024	0.032	0.032	0.008	0.000
17	0.002	0.022	0.030	0.030	0.007	0.000
18	0.002	0.023	0.028	0.028	0.006	0.000
19	0.002	0.018	0.026	0.026	0.005	0.000
20	0.001	0.016	0.024	0.024	0.004	0.000

Inspection/Maintenance Program

The emission source model has a provision for including emission reductions associated with having an Inspection/ Maintenance (I/M) program in place. Existing emission rates were calculated assuming no I/M program. For future analysis years, the model assumed that Massachusetts would implement an I/M program in 1982. The I/M program was assumed to include vehicles up to 14 years old and have a failure rate of 20%. The model also assumed that a mechanics training program would be implemented.

Distribution of Vehicle-Miles-Traveled (VMT) According to Vehicle Category

The national distribution of the Vehicle-Miles-Traveled (VMT) that is used to develop a composite emission factor consists of 80.3% automobiles, 11.6% light-duty trucks, 4.5% heavy-duty gasoline trucks, 3.1% heavy-duty diesel trucks, and 0.5% motorcycles. This distribution was used on all streets in the project area.

Mix of Cold, Stabilized, and Hot Transient Operations

Automobile exhaust emission rates are influenced by the temperature of the engine. A vehicle operated in the cold phase, for example, will have higher emission rates of CO than if the same vehicle were operated in a stabilized phase. The Federal Test Procedure (FTP) mix of 21% cold, 27% hot transient, and 52% stabilized was used in this analysis.

Ambient Temperature

Emission rates of CO decrease with increasing ambient temperatures. The FTP data were taken over a range of temperatures from 68°F to 86°F. The model can be adjusted to the temperatures that are applicable in the specific situation. To model worst case emissions, a temperature of 20°F, representing the mean minimum temperature for January in the Boston area, was used.

Traffic Volume Data

Traffic volumes are a direct measure of activity and are multiplied by the emission factors to obtain total emissions. Traffic data for all intersections in the project area were developed by Diversified Engineering Services [*A.3*]. Traffic data in the area were collected by the Boston Redevelopment Authority (BRA). Diversified Engineering Services developed volumes and capacity analyses for the various alternatives for existing (1978) conditions, 1987 (the year of planned attainment of air quality standards in Massachusetts), and 2000.

Vehicle Speed

Emissions also vary with speed. The FTP compiles emission data at three average vehicle speeds corresponding to the three phases of engine operation (cold, stabilized, and hot transient). The weighted average speed for the whole cycle is 19.6 mph, and the cycle contains acceleration (39%), constant speed operation (8%), deceleration (35%), and idle operation (18%). As such, the cycle is representative of an overall average speed rather than a cruising speed. At speeds other than 19.6 mph, adjustments to the FTP results are made. Vehicle speeds, which

were based on data from the traffic consultant, range from 5 mph on approaches to intersections to 20 mph under more freely flowing conditions.

Vehicle Operation at Intersections

The procedure for determining vehicle operation in the vicinity of intersections was taken from EPA's indirect source guidelines [*A.4*] and the "Highway Capacity Manual" [*A.5*]. Signal cycle times, the capacity of each approach, and the level of service (LOS) at each intersection were provided by the traffic consultant.

A.2 Diffusion Modeling Analysis

After the CO emissions are discharged into the atmosphere by the various emission sources, the CO is transported by the prevailing wind and diluted through dispersion by atmospheric turbulence. The resulting CO concentration at any location in the study area is dictated by the rate of emission of the CO sources, the spatial distribution of the emission sources, and meteorological variables.

The diffusion model used to model maximum 1-hr concentrations was EPA's HIWAY Model [*A.6*], as modified by Maryland's Department of Transportation [*A.7*]. The Maryland DOT version assumes the basic dispersion algorithm used in EPA's HIWAY model, while providing computational means to account for multiple roadways.

Emission Rates

Emission rates for vehicular sources are specified as emissions of CO per unit time per unit length of roadway. Where intersection approaches are below possible capacity, vehicles can be expected to proceed through the intersection without significant interruption. The average vehicle would queue as a result of a red signal, but the vehicle would be unlikely to have to wait more than one full cycle. Under these conditions, the model assumed that the average vehicle had an average overall speed of 5 mph on the approach to an intersection. This estimate is the equivalent of moving approximately 18 car lengths per minute. Verification of this assumption and an estimate of the distance over which the 5-mph speed applies were based on procedures in EPA's indirect source guidelines [*A.4*]. For vehicles moving away from the intersections, an overall speed of 15 to 20 mph was assumed.

An additional emission component is included for intersection approaches found to exceed capacity during the peak hour. Under these conditions, a line of vehicles idling continuously over the entire peak hour was used to simulate the worst possible case. The idling emissions were assumed over the final 40 m of the approach to the intersection, while 5-mph emission rates were assumed further upstream.

Spatial Distribution of Emission Sources and Receptor Locations

Layouts of the existing streets and the proposed street system were used to determine location of the line sources that represent emissions from the vehicles. These layouts were used to develop a common coordinate system by which emission sources and receptor locations could be input into the diffusion model.

Receptors were located at sensitive land uses, such as the Hawthorne Day Care Center, near street corners, and at mid-block locations. Twenty receptor locations were used in modeling the existing street system, and 22 locations were used for the proposed street system. Seventeen receptors are common to both street systems.

Meteorological Variables

The primary variables affecting the dispersion of CO are

- Wind speed and direction
- Atmospheric stability
- Vertical thickness of the mixing layer.

The prevailing wind will dictate the general direction of movement of the CO emissions. High wind speed will promote transport and result in low ambient CO concentrations. To estimate potentially worst situations, a low wind speed of 1 m/sec was used in the modeling analysis.

The stability of the atmosphere affects the dispersion or the mixing rate of CO (in an exhaust plume, for example) with the ambient air. This stability is determined by the vertical temperature gradient of the atmosphere. An unstable atmosphere will promote both vertical and horizontal mixing leading to lower concentrations. Conversely, a stable atmosphere will result in higher ambient concentrations. In the modeling analysis, a neutral atmosphere (corresponding to Pasquill class D stability) was assumed since it is most representative of urban conditions.

Another meteorology parameter affecting ambient concentrations is the vertical thickness of the mixing layer, also referred to as the mixing height. Higher mixing heights will make a larger volume of air available for dilution, resulting in lower ground level ambient concentrations. To reflect severe, though infrequent, conditions associated with low level temperatures, a mixing height of 50 m was assumed in the modeling analysis.

Background Levels

The modeling predictions of maximum 1-hr CO concentrations include an assumed background level of 4 ppm for the 1978 case. This background level was selected on the basis of results given in EPA's "Carbon Monoxide Hot Spot Guidelines" [*A.8*] and other data from the Boston area. Background levels were decreased to 1.5 ppm in 1987 and 1.0 ppm in 2000 in direct proportion to the decrease in vehicle emission factors.

8-Hr Concentrations

Maximum 8-hr CO concentrations were estimated from maximum 1-hr CO concentrations by direct scaling in most cases, using a persistence factor of 0.66. This 0.66 factor is based on a review of ratios of 1- and 8-hr concentrations monitored by DEQE in the Boston area over the past four years [*A.9*]. In cases where approach volumes exceeded capacity in the peak hour, a more detailed examination of average 8-hr volumes was made to predict the maximum 8-hr concentrations.

A.3 Model Validation

There are no ambient air quality data from the project area with which the modeling could be validated. Our experience with the model in similar settings [*A.10*] and other researchers' experience with HIWAY [*A.11*] indicate that the model tends toward overprediction and thus provides higher estimates of ambient concentrations than may be actually experienced.

REFERENCES

A.1. "Mobile Source Emissions Factors for Low-Altitude Areas Only," Environmental Protection Agency, Office of Air and Waste Management, EPA-400/9-78-006, March 1978.

A.2. "Mobile I: Mobile Source Emissions Model," Environmental Protection Agency, Office of Transportation and Land Use Policy, May 1978.

A.3. Diversified Engineering Services, Brookline, Massachusetts, personal communication, April 1980.

A.4. "Guidelines for Air Quality Maintenance Planning and Analysis, Volume 9 (Revised): Evaluating Indirect Sources," Environmental Protection Agency, Office of Air Quality Planning and Standards, September 1978.

A.5. "Highway Capacity Manual 1965," Highway Research Board Special Report 87, National Academy of Sciences — National Research Council, 1965.

A.6. User's Guide for HIWAY, A Highway Air Pollution Model," Environmental Protection Agency, EPA 650/4-74-008, February 1975.

A.7. Maryland Department of Transportation, Baltimore, Maryland, personal communication, December 1978.

A.8. "Carbon Monoxide Hot Spot Guidelines, Volume I: Techniques," Environmental Protection Agency, EPA 450/3-78-033, August 1978.

A.9. Massachusetts Department of Environmental Quality Engineering, Boston, Massachusetts, June 1980.

A.10. K.M. Chng, *et al.*, "Environmental Impact Analysis of the Proposed Mixed-Use Development of Parcel 1B, Harvard Square," BBN Report No. 4158, July 1979.

A.11. S. Trivikrama Rao *et al.*, "An Evaluation of Some Commonly Used Highway Dispersion Models," *J. Air Pollution Control Association*, 30:239, March 1980.

APPENDIX B: AIR QUALITY STANDARDS FOR CARBON MONOXIDE

National Ambient Air Quality Standards were promulgated by the U.S. Environmental Protection Agency on 13 April 1971. Massachusetts standards are identical to the Federal ones. The primary standards are intended to protect the public health, while secondary standards are designed to protect the public welfare from any known or anticipated effects. These ambient standards are as follows:

Averaging Time	Federal		Massachusetts	
	Primary	Secondary	Primary	Secondary
1-hr maximum	35 ppm	35 ppm	35 ppm	35 ppm
8-hr maximum	9 ppm	9 ppm	9 ppm	9 ppm

These standards are not to be exceeded more than once a year. According to the recent reassessment of the CO criteria, the present levels specified for the 1-hr and the 8-hr standards will probably remain unchanged.

APPENDIX B

Land Takings for Selected Alternative

Properties Remaining to be Acquired

Block/Parcel	Address
62-3	2385-2393 Washington Street 10 Guild Row
107-16A	(rear) 80 Dudley Street
17	90 Dudley Street 44-50 Roxbury Street
21	54-58 Roxbury Street
22	72-74 Roxbury Street
23	3 Perkins Place
24	78-82 Roxbury Street
25	90 Roxbury Street
26	98-100 Roxbury Street
131-12	2453-2461 Washington Street
13	2407-2445 Washington Street
16	83-93 Dudley Street
17	79-81 Dudley Street

Businesses to be Relocated

Block/Parcel	Address	Name of Business
62-3	2385 Washington Street	Draines House of Styles
	2391 Washington Street	Food Stamp Center
	14 Guild Row	Silver Slipper Lunch
107	44 Roxbury Street	U.S. Post Office
	100 Dudley Street	Faith Haven Church
	102 Dudley Street	Ralco Decalco Company
131	2407 Washington Street	Circle Supply

APPENDIX C

Massachusetts Environmental Notification Form

APPENDIX A
COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS

ENVIRONMENTAL NOTIFICATION FORM

I. SUMMARY

A. Project Identification
1. Project Name: New Dudley Street, Phase II

2. Project Proponent: Boston Redevelopment Authority
Address: City Hall, Boston, Massachusetts

B. Project Description: (City/Town(s)) Boston
1. Location within city/town or street address: Roxbury

2. Est. Commencement Date: July 1981 Est. Completion Date: July 1982
Approx. Cost $ 2.8 million Current Status of Project Design: 25 % Complete

C. Narrative Summary of Project
Describe project and give a description of the general project boundaries and the present use of the project area. (If necessary, use back of this page to complete summary).

New Dudley Street, extending from Columbus Avenue to Washington Street, was formulated as a four-lane major street element in the Campus High School Urban Renewal Project and Model Cities Area of Roxbury. The new street was planned to serve the interests of traffic safety, efficient land use requirements and environmental concerns, as follows:

1. To provide the major means of access to the new Madision Park High School and the Occupational Resource Center.
2. To frame out redevelopment areas, providing a replacement for streets being discontinued.
3. To provide a good link between the Dudley Terminal area and the Southwest Corridor.
4. To relieve the John Eliot Square area of extraneous through-traffic.

New Dudley Phase I from Tremont Street to Roxbury Street has been constructed, as have improvements to Dudley Terminal area streets, including Dudley and Warren. New Dudley Phase II, from Roxbury Street to Washington Street is necessary to fill the gap between Phase I and the Terminal. Presently the link is only one-way westbound via Roxbury Street, with the eastbound connection occuring via the awkward Putnam/(old) Dudley Street route.

Copies of this may be obtained from:
Name: Joseph McKean Firm/Agency: Green International Affiliates, Inc.
Address: 625 McGrath Highway, Boston, MA 02145 Phone No. 623-2311

THIS IS AN IMPORTANT NOTICE. COMMENT PERIOD IS LIMITED.
For Information, call (617) 727-5830

Use This Page to Complete Narrative, if necessary.

Under optimum circumstances, construction of New Dudley II could not be started until 1981, even though the operation of the Madison Park High School, the proposed Occupational Resource Center and other land uses would indicate that the link is extremely overdue.

This project is one which is categorically included and therefore automatically required preparation of an Environmental Impact Report: YES________ NO X

D. Scoping (Complete Sections II and III first, before completing this section.)

1. Check those areas which would be important to examine in the event that an EIR is required for this project. This information is important so that significant areas of concern can be identified as early as possible, in order to expedite analysis and review.

	Construction Impacts	Long Term Impacts		Construction Impacts	Long Term Impacts
Open Space & Recreation	X	X	Mineral Resources		
Historical	X	X	Energy Use	X	X
Archaeological	X		Water Supply & Use		
Fisheries & Wildlife			Water Pollution		
Vegetation, Trees			Air Pollution	X	X
Other Biological Systems			Noise	X	X
nland Wetlands			Traffic	X	X
Coastal Wetlands or Beaches			Solid Waste	X	
Flood Hazard Areas			Aesthetics		
Chemicals, Hazardous Substances,			Wind and Shadow		
High Risk Operations			Growth Impacts		
Geologically Unstable Areas			Community/Housing and the Built Environment		X
Agricultural Land					
Other (Specify)					

2. List the alternatives which you would consider to be feasible in the event an EIR is required.

(a) Alternate Roadway Layouts

(b) No Project

E. Has this project been filed with EOEA before? Yes ____ No X
If Yes, EOEA No. ____ EOEA Action? ____

F. Does this project fall under the jurisdiction of NEPA? Yes ____ No ____
If Yes, which Federal Agency? FHWA NEPA Status? ____

G. List the State or Federal agencies from which permits will be sought:

Agency Name	Type of Permit
Not Applicable	

H. Will an Order of Conditions be required under the provisions of the Wetlands Protection Act (Chap. 131, Section 40)?
Yes ____ No X
DEQE File No., if applicable: ____

I. List the agencies from which the proponent will seek financial assistance for this project:

Agency Name	Funding Amount
Federal Aid Urban Systems	$2,800,000.00

II. PROJECT DESCRIPTION

A. Include an original 8½x11 inch or larger section of the most recent U.S.G.S. 1:24,000 scale topographic map with the project area location and boundaries clearly shown. Include multiple maps if necessary for large projects. Include other maps, diagrams or aerial photos if the project cannot be clearly shown at U.S.G.S. scale. If available, attach a plan sketch of the proposed project.

B. State total area of project: 105,000 square feet
Estimate the number of acres (to the nearest 1/10 acre) directly affected that are currently:

1. Developed .... 2.5 acres
2. Open Space/Woodlands/Recreation ____ acres
3. Wetlands .... ____ acres
4. Floodplain .... ____ acres
5. Coastal Area .... ____ acres
6. Productive Resources
   - Agriculture .... ____ acres
   - Forestry .... ____ acres
   - Mineral Products .... ____ acres

C. Provide the following dimensions, if applicable:
Length in miles .25 Number of Housing Units NA Number of Stories NA

	Existing	Immediate Increase Due to Project
Number of Parking Spaces	85	20
Vehicle Trips to Project Site (average daily traffic)	10,000	3,000
Estimated Vehicle Trips past project site	15,000	7,000

D. If the proposed project will require any permit for access to local or state highways, please attach a sketch showing the location of the proposed driveway(s) in relation to the highway and to the general development plan; identifying all local and state highways abutting the development site; and indicating the number of lanes, pavement width, median strips and adjacent driveways on each abutting highway; and indicating the distance to the nearest intersection.

I. ASSESSMENT OF POTENTIAL ADVERSE ENVIRONMENTAL IMPACTS

Instructions: Consider direct and indirect adverse impacts, including those arising from general construction and operations. For every answer explain why significant adverse impact is considered likely or unlikely to result.

Also, state the *source* of information or other basis for the answers supplied. If the source of the information, in part or in full, is not listed in the ENF, the preparing officer will be assumed to be the source of the information. Such environmental information should be acquired at least in part by field inspection.

A. Open Space and Recreation

1. Might the project affect the condition, use or access to any open space and/or recreation area?
Yes X No ______

Explanation and Source:

During the construction of New Dudley Street traffic will be detoured through side streets from Roxbury Street to Washington Street which will cause some inconvenience to the public.

When New Dudley Street is completed access to the Campus High School athletic field will be more accessible.

B. Historic Resources

1. Might any site or structure of historic significance be affected by the project? Yes X No ______

Explanation and Source:

It will make it easier for visitors to commute to John Eliot Street Square where the Thomas Dilloway House and the First Church of Roxbury are located.

2. Might any archaeological site be affected by the project? Yes ______ No X

Explanation and Source:

During previous construction projects in the Campus High School project area, no archaeological artifacts have been uncovered.

C. Ecological Effects

1. Might the project significantly affect fisheries or wildlife, especially any rare or endangered species?
Yes ______ No X

Explanation and Source:

There are no fisheries or wildlife existing in this project area.

2. Might the project significantly affect vegetation, especially any rare or endangered species of plant?
Yes ______ No X
(Estimate approximate number of mature trees to be removed: none)

Explanation and Source:

Not applicable

3. Might the project alter or affect flood hazard areas, inland or coastal wetlands (e.g., estuaries, marshes, sand dunes and beaches, ponds, streams, rivers, fish runs, or shellfish beds)? Yes ______ No X

Explanation and Source:

Not applicable

4. Might the project affect shoreline erosion or accretion at the project site, downstream or in nearby coastal areas? Yes ______ No X

Explanation and Source:

Not applicable

5. Might the project involve other geologically unstable areas? Yes ______ No X

Explanation and Source:

Not applicable

D. Hazardous Substances

1. Might the project involve the use, transportation, storage, release, or disposal of potentially hazardous substances?
Yes ______ No X

Explanation and Source:

Not applicable

E. Resource Conservation and Use

1. Might the project affect or eliminate land suitable for agricultural or forestry production?
Yes ______ No __X__
(Describe any present agricultural land use and farm units affected.)

Explanation and Source:

Not applicable

2. Might the project directly affect the potential use or extraction of mineral or energy resources (e.g., oil, coal, sand & gravel, ores)? Yes ______ No __X__

Explanation and Source:

Not applicable

3. Might the operation of the project result in any increased consumption of energy? Yes __X__ No ______

Explanation and Source:
(If applicable, describe plans for conserving energy resources.)

There will be a small increase in the consumption of energy due to the additional street lighting and traffic signals.

F. Water Quality and Quantity

1. Might the project result in significant changes in drainage patterns? Yes __X__ No ______

Explanation and Source:

With the construction of New Dudley Street the existing combined drainage system will be separated giving the area new drain lines within the project.

2. Might the project result in the introduction of pollutants into any of the following:
(a) Marine Waters . . . . Yes ______ No __X__
(b) Surface Fresh Water Body . . . . Yes ______ No __X__
(c) Ground Water . . . . Yes ______ No __X__

Explain types and quantities of pollutants.

Not applicable

3. Will the project generate sanitary sewage? Yes ____ No _X_

If Yes, Quantity: ________ gallons per day

Disposal by: (a) Onsite septic systems . . . . Yes ____ No _X_

(b) Public sewerage systems . . . . Yes _X_ No ____

(c) Other means (describe)________________________________

New sewers will be constructed as part of the separation of combined systems. They will pick up existing and future sewage flows and empty them into existing systems outside the project.

4. Might the project result in an increase in paved or impervious surface over an aquifer recognized as an important present or future source of water supply? Yes ____ No _X_

Explanation and Source:

Not applicable

5. Is the project in the watershed of any surface water body used as a drinking water supply?
Yes ____ No _X_

Are there any public or private drinking water wells within a 1/2-mile radius of the proposed project?
Yes ____ No _X_

Explanation and Source:

Not applicable

6. Might the operation of the project result in any increased consumption of water? Yes ____ No _X_

Approximate consumption ______ gallons per day. Likely water source(s)________________

Explanation and Source:

The only increase in water consumption might be a temporary increase needed for construction purposes. This would be provided by the Boston Water and Sewer Commission Mains.

7. Does the project involve any dredging? Yes ____ No _X_

If Yes, indicate:

Quantity of material to be dredged________________

Quality of material to be dredged________________

Proposed method of dredging________________

Proposed disposal sites________________

Proposed season of year for dredging________________

Explanation and Source:

Not applicable

G. Air Quality

1. Might the project affect the air quality in the project area or the immediately adjacent area?
Yes X No ____
Describe type and source of any pollution emission from the project site. CO, TSP

During construction dust will be a pollutant factor. After the completion of the project more cars, buses, and trucks will be using the new roadway creating minor increases in air pollution.

2. Are there any sensitive receptors (e.g., hospitals, schools, residential areas) which would be affected by any pollution emissions caused by the project, including construction dust? Yes X No ____

Explanation and Source:

As above the limited quantities of construction induced dust could cause some discomfort to the schools and businesses that exist adjacent to the site, but controlling measures should keep this to a minimum.

3. Will access to the project area be primarily by automobile? Yes X No ____
Describe any special provisions now planned for pedestrian access, carpooling, buses and other mass transit.

Buses will be using the roadway to transport visitors and pupils to the Campus High School and the O.R.C. building. Trucks also will be using roadways so as to make deliveries and pickups.

H. Noise

1. Might the project result in the generation of noise? Yes X No ____

Explanation and Source:
(Include any source of noise during construction or operation, e.g., engine exhaust, pile driving, traffic.)

Noise from construction equipment ie: cranes, dozers, trucks, etc. will be present during construction.

After construction there will be an increase in vehicular traffic; cars, buses, and trucks.

2. Are there any sensitive receptors (e.g., hospitals, schools, residential areas) which would be affected by any noise caused by the project? Yes X No ____

Explanation and Source:

Two schools area located adjacent to the project site. Effects of construction noise should be minimal due to the controlling measures to be taken by the contractor.

I. Solid Waste

1. Might the project generate solid waste? Yes _X_ No ___

Explanation and Source:
(Estimate types and approximate amounts of waste materials generated, e.g., industrial, domestic, hospital, sewage sludge, construction debris from demolished structures.)

Pavements, concrete walks, and some wood debris will be removed from the site by the Contractor. Approximately 5,000 c.y.

J. Aesthetics

1. Might the project cause a change in the visual character of the project area or its environs?
Yes _X_ No ___

Explanation and Source:

Before construction starts on New Dudley Street some remaining buildings will be demolished leaving an open space area which might be built on in the future.

2. Are there any proposed structures which might be considered incompatible with existing adjacent structures in the vicinity in terms of size, physical proportion and scale, or significant differences in land use?
Yes ___ No _X_

Explanation and Source:

Not applicable

3. Might the project impair visual access to waterfront or other scenic areas? Yes ___ No _X_

Explanation and Source:

Not applicable

K. Wind and Shadow

1. Might the project cause wind and shadow impacts on adjacent properties? Yes ___ No _X_

Explanation and Source:

Not applicable

IV. CONSISTENCY WITH PRESENT PLANNING

A. Describe any known conflicts or inconsistencies with current federal, state and local land use, transportation, open space, recreation and environmental plans and policies. Consult with local or regional planning authorities where appropriate.

Project is consistent with the Campus High School Urban Renewal Plan and the Highland Park renovations.

V. FINDINGS AND CERTIFICATION

A. The notice of intent to file this form has been/will be published in the following newspaper(s):

(Name) ____________________ (Date) ____________________

____________________ ____________________

____________________ ____________________

B. This form has been circulated to all agencies and persons as required by Appendix B.

____________ Date

____________________ Signature of Responsible Officer or Project Proponent

____________________ Name (print or type)

Address ____________________

____

Telephone Number ____________

____________ Date

____________________ Signature of person preparing ENF (if different from above)

Joseph P. McKean

Name (print or type)

Address Green International Affiliates, Inc.
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Green International Affilate Inc
Enviromental Reassessment
New Dudley St. Phase 2

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